Telephony.

THE AMERICAN TELEPHONE JOURNAL

Comprising Telephony, American Telephone Journal, Telephone Weekly, Telephone Magazine, Telephone Securities, The Telephone and Sound Waves
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CHICAGO, OCTOBER 26, 1912

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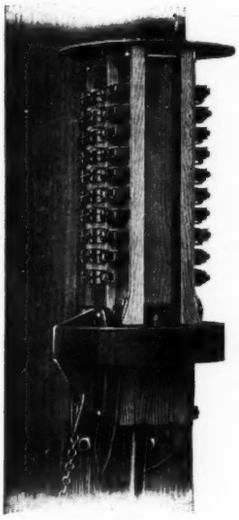

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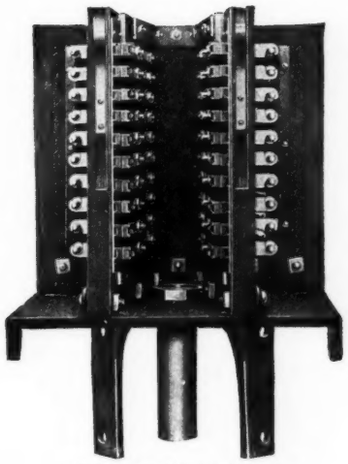

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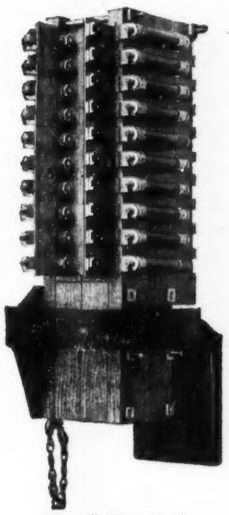

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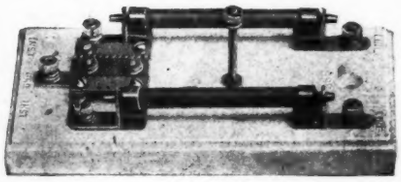

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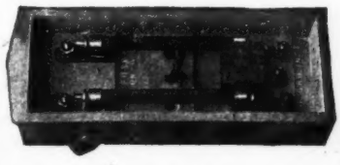

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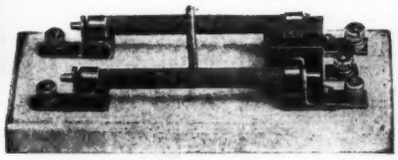

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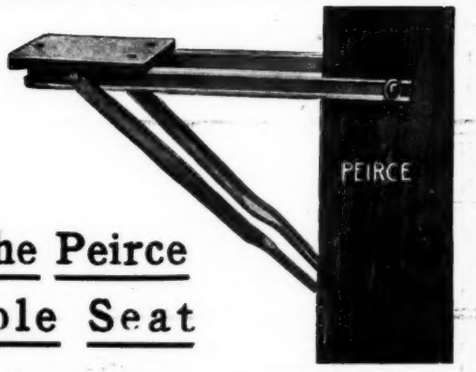

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A Company is Judged by the People it Keeps.

Every employe of the company who comes in contact with the public either directly or over the telephone is regarded not as an individual but as the company itself.

To every employe is given the privilege of making or losing friends for the company. Friends count as much in business as in social relations and are as indispensable to this company as to you personally.

Therefore, in dealing with the public take the attitude that you are making a personal friend and you will advance not only your own interests but those of the company as well.—A card issued to its employes by a big western company.

The Switchboard Man.

Since the introduction of the common battery switchboard with its many circuits and different pieces of apparatus, the standard for men competent to take care of the board has been gradually raised. No longer will any man who comes along do for this work. The switchboard man of today must have some education so that he can understand the electrical principles involved in the operation of the board. He must have reasoning powers so that he can comprehend why, under certain conditions, a specified relay will not operate, or a magnet is not energized.

Then he must be able to read a blue print and follow out a circuit and locate the various parts in their position in the board. A man who knows the switchboard circuits does not clear trouble by any "hit or miss" method. He knows from its nature that it can be due only to certain causes and rapidly eliminates each suspected cause until the real one is found. The trouble is not only cleared but its cause removed so that re-occurrence from the same source is rare. A good wire chief will not tolerate the repeated occurrence of the same trouble. Switchboard men are coming to recognize this as is shown by the higher standard of their work.

For every complaint there is a reason and the switchboard troubleman should accept complaints as real trouble and not fancied, even if the line tests O. K. upon his starting to locate the trouble. He should not be satisfied with a test of this kind but should investigate further in an endeavor to obtain an explanation for the filing of the complaint. Possibly some condition obtained at the time of the complaint was filed which was responsible for the trouble and this may be discovered upon careful investigation. It is not sufficient that the line tests clear, the real source of trouble should be known, and steps taken to prevent its reappearance.

The switchboard man working in harmony with others of the operating force can do much toward sustaining pleasant relations between the public and the company. The man who causes trouble on several lines while clearing trouble on one line is not wanted in any exchange.

There is always a place for the man who clears a trouble, which stays cured, and who does it in an intelligent and workmanlike manner.

Error.

If we could have our way there would be no error. It is the ideal condition toward which we strive and for which we earnestly long. Yet we know that error is inseparable from human endeavor. There are mistakes in everything which we do, from the hanging of a telephone to the collection of a bad account. And still we manage to be happy.

The recognition of error is essential to progress. The man who overlooks it or says that it does not exist is either ignorant or a liar. In either case he is not fit to be trusted with the care of a 10-line magneto board. For to overlook error leads to worse mistakes. None realizes the presence of error more than those who have the least

of it, for their constant endeavor to excel has made their mistakes painfully real.

The mistakes which we make in dealing with men and affairs may be called non-mathematical errors, but our shortcomings in the realm of materials and forces are mathematical. Take the case of an overdue account. Perhaps the manager makes a mistake when he removes the telephone for non-payment and makes an enemy to the company, and perhaps he misjudges the case if he leaves the telephone in and runs the chance of losing a still larger bil. The error of 10 ohms in a 250-ohm coil is readily expressed as 4 per cent. error.

Even the most successful men make mistakes, but they seldom make the same mistake twice. This fact marks the progressive from the blunderer.

The secret of few errors in any line of work is attention and self-checking. The wandering mind has no place in the business world. While you are doing the work for which you expect to be paid, do not think of another thing, but concentrate on it as if it were the most important thing in the world. Then, having done it in the best and most honest way, look it over to see if you have really done it in that way. This check, if done with the eyes open, will effectually prevent 99 per cent. of the troubles and errors which load the work of mankind and render it inefficient and even ineffective.

"Your friend," says Elbert Hubbard, "is your competitor, who stings you into action."

Utilizing the Long Evenings.

The season of the year which is accompanied by long evenings is now at hand. The progressive man, the man who is anxious to better his condition, has laid plans to spend these long evenings of the next six months in studying and otherwise fitting himself for a more responsible position than the one he now holds. One living in the larger cities probably has entered a night school, another may have laid out a course of evening study supplemented by attendance at lectures of various kinds.

The man in the smaller town does not have the city advantages but he nevertheless has made his plans for winter advancement work. If he is employed as troubleman or in the wire chief's department he probably has determined upon a course of reading and study of electrical subjects. He visits the town library and learns what books are available for his use. If the library does not contain books of the kind he wishes, he writes to several of the publishers of technical books for a catalog of the latest books. Then he selects one or more books which deal with the particular subjects in which he is interested.

He probably wants to learn about the fundamental principles of electricity so as to be able to understand the reasons for various things he does in the course of his daily work. In other words he wants to learn the application of theory to practice. As his reading progresses, he begins to understand many things which formerly had no meaning to him. He is always looking for an opportunity to learn something about his work which will make it better and incidentally put him in line for a better position.

He is never too old to learn. In that respect he differs from an installer who has occasion to make out small number tags for placing on instruments. This man was not expert on making letters or figures and when on a recent installation, requested one of the other men to make out the tags. The other man made them but asked why he did not practice lettering himself remarking that it is not difficult to become a fair letterer with practice. The reply was that he was too old to learn. He simply is in a rut and is not ambitious to become anything more than what he now is, a good workman along certain lines.

But the progressive, ambitious man is planning ahead and does not intend to always occupy the same position. He is willing to sacrifice some present day pleasures or comforts to provide for the future. He is the one who reads carefully the various papers and journals relating to his work, buys books and studies them thoroughly. He utilizes these long evenings to the best advantage and is always on the lookout for additions to his store of knowledge.

There are many men in the telephone field as well as in other lines of work who have materially added to their prosperity by taking advantage of opportunities for studying during the long winter evenings. It takes determination, will power, to force one's self to study at night after a hard day's work but it is certainly worth while. The man who has the stick-to-it-iveness to follow out such a course will find his work much easier, pleasanter and the reward much greater.

When a man is prepared for a position, the position is usually waiting for him. Are you prepared for your position?

Appearance.

An insurance solicitor for one of the eastern life insurance companies interviewed one of the editors of this paper the other day. The corporation which he represented has a capitalization running into seven or eight figures, and policies outstanding aggregating a tremendous sum. Yet its representative—the special agent of the president and the board of directors, as it were—needed a shave, a haircut and a shine. His collar showed unmistakable signs of having been in service several days, and several days' wear of a linen collar in Chicago speaks for itself. His finger nails were unclean and his clothes unpressed.

How elementary these things are! And how inexcusable their neglect! Not a defect in this man's unpleasing appearance but could have been remedied by himself at home, except the cutting of his hair and the laundering of his collar. The first costs fifty cents a month; the second, two cents day. Tailors and manicurists are desirable, but not essential.

So far from inspiring confidence and an inclination to discuss his proposition, we were moved to the exact reverse. He might have had a meritorious scheme of insurance to offer, but he did not get the chance of a hearing. As Kelsey would say: "Moral —It pays to be clean and tidy."

Modern Methods of Ventilating Telephone Exchanges

The Equipment Used in Pittsburgh for Ventilating Exchange Buildings—Various Methods of Ventilating Described by Charts and Photographs at International Congress on Hygiene and Demography—Reprinted from The Telephone News

At Washington, D. C., there was held from September 23 to 28 the Fifteenth International Congress on Hygiene and Demography. The congress occurs in various cities all over the world at five-year intervals. Usually the country's executive, in whatever city the congress is held, acts as the presiding officer. This year President Taft acted. At the previous session, held in Berlin, the Kaiser presided.

Among the various companies that exhibited, the American Telephone & Telegraph Co. showed photographs and drawings of devices used in its work in occupational hygiene among its associated companies. Welfare work, the use of safety appliances for the prevention of accidents, the lighting, heating and ventilating of its buildings have engaged the attention of many Bell officers, engineers and other employes at intervals for several years.

For the congress just held special buildings were provided in Potomac Park by the committee on organization. There were also outdoor exhibits.

Of the exhibits furnished by the Bell company, the safety lamp was interesting. It consists of a portable outfit for lighting manholes and for highway danger signals. An Exide storage battery provides current for two 6-volt, 6-candle power tungsten lamps. The 18-foot lead connecting them is damp-proof. A connecting plug and socket, a ruby globe, jacks, switch and fuse complete the device. When this is in use, no furnace or other lighting or heating apparatus is permitted in the manhole.

For the benefit of office employes the glass ventilators commonly in use were shown in photograph form. The standing exercise practiced by operators each morning and afternoon was also represented by photographs.

AIR-CONDITIONING MACHINE.

The most interesting exhibit, however, was a large drawing of what is termed an "Air-Conditioning Machine." This has been in successful operation in the Seventh Avenue Building of the Central District Printing & Telegraph Co., Pittsburgh, for some time. The "Court" central office building at Pittsburgh and the operators' school at 406 Market street, Philadelphia, have been similarly equipped more recently.

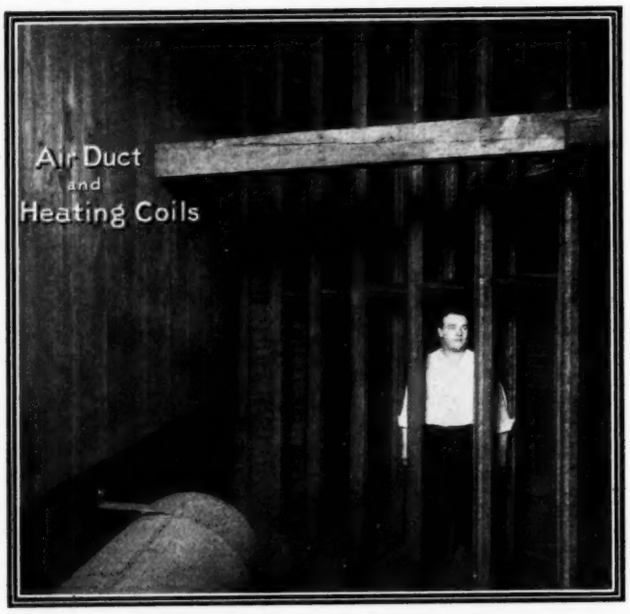
Blower and Motor which Forces Air into the Ducts of Ventilating System in one of the Pittsburgh Exchanges.

The air-conditioner installed in the office building at Pittsburgh is described by R. A. L. Snyder, plant engineer at that location.

It is in order first to give the reasons for its installation and tell something about the various conditions to be met.

Originally the operating room of this building was ventilated by means of a large exhaust fan. This method gradually fell into disuse on account of the amount of dirt sucked into the room and also on account of cooling off the room in the winter time and making a certain amount of noise. The old system also seemed to give the operators colds.

When a large annex was built to the old building a ventilating system was installed to ventilate the operating quar-



Tempering Coils Which Raise Temperature of Air.

Apparatus which Keeps the Air in Motion.

The Spray Chamber Through which the Entering Air Passes.

ters on the fifth, seventh and ninth floors of the new building. The air-intake was covered with cheesecloth screens for removing the soot from the atmosphere. The screens choked up rapidly, were hard to clean, and seemed to allow a lot of fine dirt to be carried into the operating rooms.

It was felt that a ventilating system should be provided for the operating room. A study was made of the various systems upon the market, and the system that appealed to the engineers most strongly was one that provided for washing and humidifying the air at the same time.

The engineers decided that the system to be installed should eliminate most of the dirt from the air, warm it in the winter time, cool it in the summer time, and regulate the humidity all the year round. It was found that there were several systems on the market which would meet these requirements. The arrangements of these systems are similar.

Operation of the Machine.

The general arrangement is as follows:

Directly after the air enters the system, it passes over either tempering coils or a warm spray in order to bring the temperature up to approximately 55° F. Next is a spray chamber through which the air passes and in which solid matter and gases combine with the spray and are eliminated from the air. The air then passes through a system of eliminator plates. These eliminator plates extract some of the moisture from the air. Beyond the eliminator plates

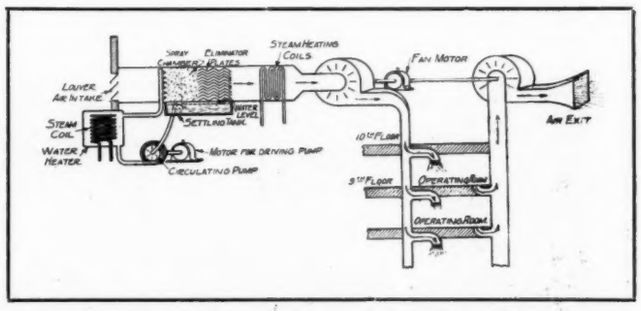


Diagram Showing Operation of Ventilating System in Pittsburgh.

are heating coils in which the air is heated to the temperature required in the room. Beyond this is a fan for moving the air. Reference to the accompanying drawing will show a diagrammatical view of the arrangement as installed.

The function of each part of the equipment is as follows:

In the system shown the air first enters the spray chamber. Here it is tempered and humidified. A brief description of the principles of humidity will help one to understand the reasons for desiring its control. At zero temperature one cubic foot of air saturated with moisture contains less than a half grain of water, while air at 72° will hold 8½ grains of moisture per cubic foot. Now if air at zero temperature is blown into a room and heated up to 72°, it is very dry, and in a condition readily to absorb moisture from any source available.

When people breathe this very dry air, it has a tendency to make excessive evaporation from the membranes of the nose and throat which is irritating and causes colds. Air at 72° containing 8½ grains of moisture per cubic foot is termed saturated. If air at this temperature contained half this amount of moisture, it would be defined as having a humidity of 50 per cent. From a great many observations and experiments it has been determined that the best air for people to breathe continuously should have a humidity of between 50 and 75 per cent.

Air at 52° will be saturated when it contains more than 4.37 grains of moisture per cubic foot. If air is passed through a water spray at that temperature it will absorb

4.37 grains of moisture. If this same air is then heated up to 72° its humidity would be 50 per cent.

One can readily see that if the water in the spray chamber is kept at a constant temperature of say 55°, the air passing over it will absorb enough moisture so that when the temperature is raised to 72°, it will have a humidity of 50 per cent. The temperature in the spray chamber can be regulated in winter weather by means of a thermostat controlling the supply of steam to the water heater, as shown in the diagram.

In summer weather the temperature is regulated by cool water pumped from an artesian well. In winter the water is circulated from the settling tank by means of a pump through the water heater into the spray nozzles which atomize it into the spray chamber. The water falls into the settling tank, from where it is again circulated. The atomized water collects a great deal of dirt from the air. If the water in the settling tank is not changed frequently it soon becomes thick and murky. A test of water from the Seventh avenue washer showed that it collected 4.92 pounds of solid matter within two days. The eliminator plates extract some of the moisture from the air and also help to extract solid particles from the air.

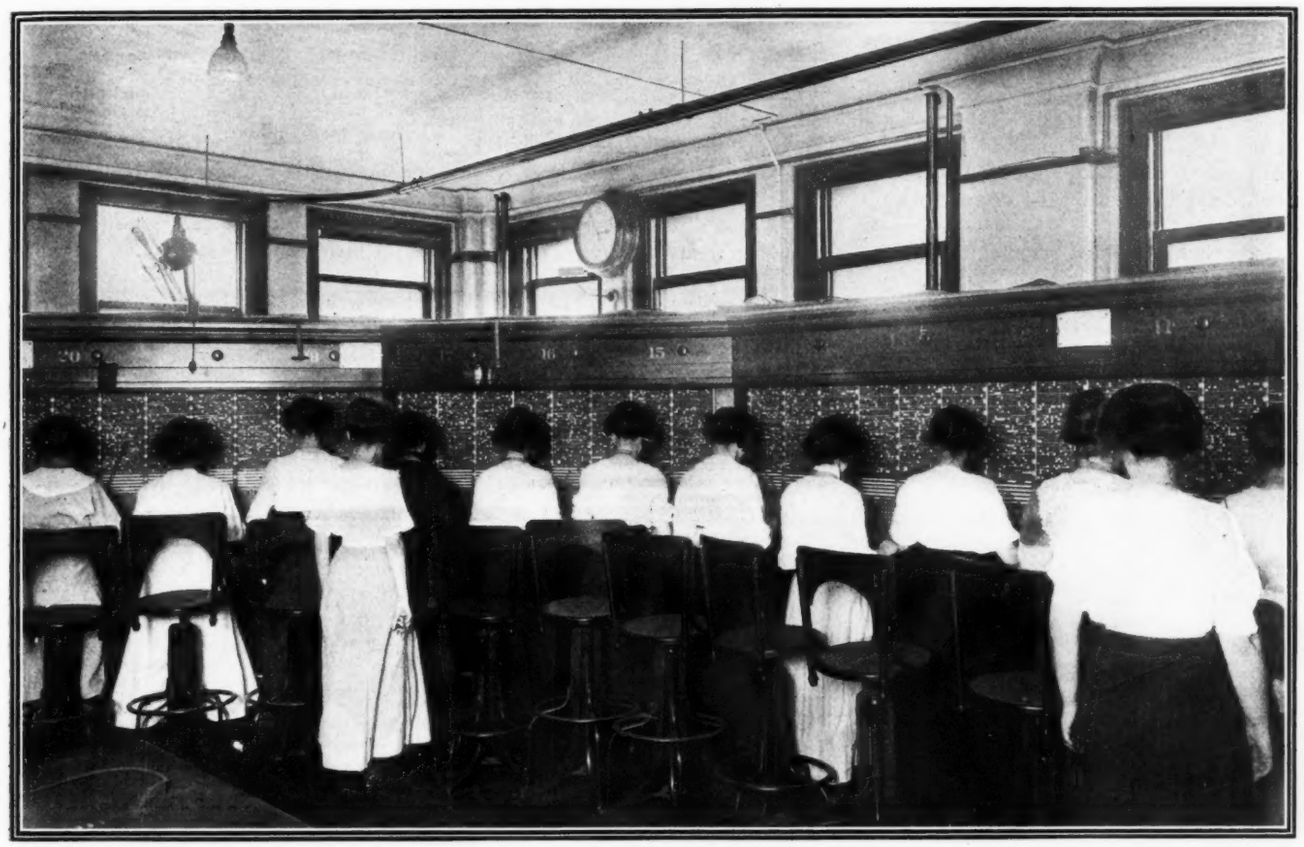
In some systems the first three rows of eliminator plates are flooded with water. The arrangement of the eliminator plates shoots the air against wet surfaces, and the solid matter traveling in a straight line is gathered on the wet surfaces and washed away. A very complete test was made of the Seventh avenue washing system to determine how much dirt was eliminated from the air.

Cheesecloth screens treated with a little kerosene oil were placed before and after the cleaning system. These tests showed that over 65 per cent. of the dirt was removed from the air. The manufacturer claimed that the air washer would remove 98 per cent. of the dirt, but our experiments indicate that we cannot obtain such good results. No doubt there is a large percentage of dirt caught which would pass through a cheesecloth screen.

After the air passes through the eliminator chamber, it comes in contact with steam heated coils under thermostatic control. These coils are used to heat the air in winter weather. From the coils the air is blown through large tubes into the operating room, and, after circulating in the operating room, it is drawn out at the floor line and exhausted into the air by means of another fan.

In the summer time we are able to reduce the temperature in the operating room by the use of artesian well water to approximately 10° below the weather temperature. The system in the Seventh avenue office building has a capacity of 30,000 cubic feet of air per minute. We are installing another system in the Court office building with a capacity of 5,000 cubic feet of air per minute. This system is just about completed and is expected to be placed in operation shortly. While the systems are rather expensive to operate, yet we believe that the company gains by keeping its operators in a good, healthy atmosphere.

Ventilation is furnished for approximately one hundred operators located in the local and long-distance toll rooms and in the operators' school.



The Five Minute "Stand" Exercise of Operators which is Practised Twice a Day—Note the Open Windows.

Protests Against Rural Toll Charge.

A stockholder in the Atchison County Mutual Telephone Co. of Muscotah, Kans., has filed a complaint with the Public Utilities Commission against the toll rates recently put into effect by the company in the neighborhood surrounding Muscotah.

Formerly the subscribers of the company received free service in the immediate neighborhood, but recently a charge of ten cents per call was put into effect. The commission took the matter under advisement.

Why Is the Telephone?

A Peculiar Invention—Its Mysterious Psychology!

By J. C. Kelsey

Several people claim the distinction of introducing the telephone. One Frenchman, a Dutchman and two Yankees claim places in the first division of the international league of telephone inventors. I don't put any faith in any of them.

I am commencing to believe that no human being is responsible for it. *The devil invented the telephone!* No one else had a hand in it.

If any human being had a share in it, the industry behind it would behave according to human rules. But it works according to no rule.

It ignores the past by making its own precedents and disturbs the future by its apparent indifference to all other things.

It is like the Irishman's flea—you can never put your hand on it—and you never know its next move.

What an opportunity our Puritan forefathers missed! It is not their fault that no specter of a telephone man sighs in the passing breezes of Salem Hall.

He never could have escaped. Our practical forefathers would have hung him head downward!

Some human beings respond readily to homeopathic treatment; others do not.

The telephone industry responds to no treatment—it resists every human impulse. That is why it is no human invention. It was released by Pandora years and years ago, to be the chief irritant of our social and business life.

The principal motto of the telephone industry is this: "We cut off our nose to spite our face!" And the motto can nicely apply to all financial institutions.

When I read the other day that Cleveland could not dispose of telephone bonds to financial houses, then I knew that the motto is justified.

Cleveland seems very much interested in the telephone question. Any town which owns trolley and electric light plants, and advocates a municipal base-ball club, could not long overlook the telephone. The bait is too tempting!

A financial paper made the threat that this great, vigorous municipality could not sell its own bonds.

What is the difference whether telephone, sidewalk improvements, water or electric light? None at all!

It is a well-known fact that banks and financial houses have ignored the Independent telephone bond. There was such a campaign of abuse and slander that this best and safest security has never been handled extensively by the money changers.

Bond houses have large expenses. They are not in the game for fun. But it is intimated that this form of municipal bond will be rejected by the Solomons of finance, because it happens to be a telephone bond.

It ordinarily takes fifteen years for a security to get a decent footing in the financial world. Interurban securities were reviled for fifteen years before they got into financial society. No one believed that anyone would care to ride 25 or 50 miles in a jerking car.

Telephone securities are fifteen years old, and they are still in the outer room of financial society. And worse—financial society will not receive the telephone even when introduced by the very aristocratic form of security, a municipal guarantee.

Cleveland proposes to bridge her telephone bond difficulties by popular subscription. And it is dollars to cents that the issue will be oversubscribed.

Yet an issue of this kind is to be rejected by financial houses because it is a telephone bond!

Being interested in competitive telephony, the entire face of a municipality is to be changed. It is entirely different, you know.

Even in Kansas, where the people loudly proclaim their love of rock-ribbed liberty, a telephone bond has no standing at all. The state bank examiner throws them out ruthlessly. He loves accommodation paper, and check-kiting a hundred times better. But being a telephone bond, it is different. There's a reason!

The insinuation at Cleveland regarding a possible failure to dispose of their bonds, intimated that it would be so if the bonds were competitive.

Why does finance pretend to hate competition? It does nothing else all day long. Banks themselves are past masters in competition. They fight every hour for the deposits of the people. Yet they hold up their hands in horror at the word "competition."

Competition is right or wrong entirely according to local conditions. It is a local issue. It is exactly a case of which ox is gored.

I have read tons of literature on the atrocity of competition—that a second company is a burden and a terrible nuisance—and that the cost falls upon the community!

To my shocked surprise I find the Bell company is still making an active campaign at Johnstown, Pa. This city has one of the most conspicuous Independent telephone successes anywhere. Every Bell invasion has been repulsed with great loss.

Like the Devil's Den at Gettysburg, men, officials and money have charged, and charged again upon it, always with great loss. The new Bell management is to blame for this foolish outlay of money.

Let me promise right here, that the Bell interests will get the worst of the fight, since they are flying in the face of an economic law.

It might as well be said here. The attack upon Johnstown seemingly has been made because the general manager of the telephone company testified for the citizens in the Albany rate case.

It seems impossible that any concern would spend hundreds of thousands of dollars on spite work, just to punish a man. It would be impossible were nepotism and favoritism extinct.

What every private enterprise needs is an order discharging every brother, cousin, uncle and grandfather of company officials above the rank of division superintendents. It would save millions by practically eliminating incompetency and dronism—the curse of great and small corporations.

It would seem justifiable to resort to competition when there is a chance at success. But at Johnstown there is no hope of success. The program is destruction, pure and simple, the destruction in this case being self-inflicted.

But it is a different business from any other. It is the telephone business! Mortals have no right to question whatever is done.

It seems queer that Cleveland is to be punished if it goes into competition with the existing systems. It is a cinch that it can not afford to buy the existing systems. To take on a so-called double burden, in addition to scrapping all the present switchboards, spells ruin and loss from the start.

Possibly there is some method in this madness of threatening Cleveland with a financial boycott. Possibly it is to force the city to buy out the present systems.

Whatever Cleveland does toward either public or private consolidation will fall heavily on her people. She is up against it. If she starts clean, she has a financial boycott to fight. If she starts with a double burden, the finish is ruin—just plain ruin!

Of the two evils, a financial boycott is the lesser! It is a case of trouble! Trouble!! Trouble!!! It is a telephone situation.

I was not surprised to hear some foolish person talking "financial boycott." I expected it, but hoped that no one would care to expose himself so carelessly.

Financial houses should not take themselves so seriously, nor financial editors, either. They merely act as agents for securities. They neither buy nor sell for permanent purposes; neither do they toil or spin. They know full well that a locality has to absorb its own securities.

Anyone who makes a financial deal in New York has to guarantee a sale of 80 per cent. of the securities locally. It is a case of popular subscription any way you take it.

Cleveland would dispose of every bond in less than a day. If the threats keep on, the issue will likely be oversubscribed in advance.

The more helpless a bunch is, the more important is their claim. A bunch of petty bond dealers don't affect the community as much as a grocery store in the suburbs. They really are less important. A threat from such a crowd is a fine compliment to Cleveland.

They are a bunch of spendthrifts. There are too many of them anyway. Their talk of brute force is very amusing. It is more of the "slap on the wrist" variety.

The proper name for these financial dealers or parasites might be "industrial prostitutes."

Brute force will never win anything in this world. It has been tried in telephone finance and many, many timid men fell by the wayside, unable to resist a little bit of quick profit.

There never was such a good business. That is why every tactic known was made use of.

H. G. Wells wrote of an invasion from Mars. The Martians came to earth, irresistible and impervious to earthly attack. But they were suffocated by the very fumes of the ruin they themselves wrought.

That book shows convincingly that great unreasoning brute forces always set up action in the opposite direction. Brute force on the question of municipal telephone bonds will defeat itself.

Those who doubt the actual existence of a financial oligarchy will be compelled to believe there is one, if it is true that financial houses will boycott municipal telephone bonds.

I can scarcely believe that the determination to kill telephone competition will go that far.

I don't blame financial houses for being careful about the issues they sell. It is very uncomfortable to unload an issue of bonds, and then have the coupons returned. That is exactly what puts bond houses out of business.

The issues of real and permanent coupon payers are so scarce that there will be no boycott upon a Cleveland bond. You can bet on that!

Brokers and investment dealers, as well as banks, will yet learn that they do not control the roost, particularly when it comes to a municipality. They are up against it and know it.

A municipal or national enterprise has its own troubles, anyway. They are damned if they make a dollar, and damned if they don't.

Right in Cleveland is an association, vigorously objecting to Uncle Sam making a dollar on mail service.

It is a pretty exact business science that can hew to a fixed line of income.

The National One-Cent Letter Postage Association, in the first place, certainly does need a rubber stamp. It is a long name to write and even read.

It says the primary function of the post office department in all modern governments is to furnish, without profit, a low cost distribution of letter mail for all the people.

It seems that 30,000 people are getting second class privileges and making 97,000,000 pay for them. How very American! Surely no one can see any wrong in this if he believes in a high protective tariff.

Taxing the many for the benefit of the few is a device known long to the human race.

For fifteen years the telephone battle has been waged. Men have come and men have gone. It looks as if the fight will go on forever.

It looks to me as if the people will not be satisfied with rewarding Independent telephone men with monuments, as they believe in Grand Rapids. They are going right on with the telephone business themselves.

Men may sell out and loaf disconsolately the rest of their lives. It does not settle the telephone question.

I believe that no telephone company on earth has been real happy after eliminating the so-called two-telephone "nuisances."

As some people enjoy funerals, so the public enjoys some brand of telephone trouble.

It looks to me as if no human act can satisfy the public on the telephone question. The public will be just as dissatisfied with public control—there will be just as much discontent.

The question is full of inconsistencies. We have had so many inconsistent precedents.

We are taught the beauty of *one* telephone in some places, and see millions spent in putting *two* telephones in other places.

We have heard the telephone called "the most profitable business on earth" and, in the next breath, we know that the "rapidly changing art" makes every one lose money.

The telephone platform is as mixed up as a political platform. It has as many weak planks and it is as dangerous to drive across.

I have about decided that the telephone business belongs to an outlaw league. You can not predict anything fifteen minutes ahead of time. You are at sea regarding even its past—and doubtful of its present behavior.

We may have municipal competition—and we may not. It is an even bet.

But financial threats at this stage of existence will do little to hinder. On the contrary they will help.

Most people thrive best on the enemies they make. Municipal telephone service will thrive upon financial opposition.

Something is vaguely stirring the people. Possibly it is due to impure breakfast food. I can't figure out whether they will search for the Holy Grail, or try to capture the tomb of the Nazarene. Everyone seems to be exercising for some heroic deviltry.

Possibly this is only a pre-election symptom and will happily disappear soon.

To the political discontents who are sighing for the head of Wall Street there is a chance to chuckle. Wall Street has an elephant on its hands. Its name is "Telephone." It is housed now in a universal cage.

Captivity may temporarily change its temper, but not its characteristics. It is an animal with local habits and spots, and they cannot be changed.

The telephone may be a human invention, and not have come from a fiercely-flaming demon workshop. But it certainly has no equal as a human irritant and an active force. No human being can check its freedom.

Time, tide and telephone begin with the same letter—and they "wait for no man."

MORAL: The germ of telephone discontent has not yet been isolated.

Proceedings Before Commissions, Courts and Councils

Discussions and Rulings of State Bodies Having Supervision of Telephone Companies, Decisions of Courts in Matters Affecting Public Relations of Utilities, and Actions of City Councils Bearing Upon Franchises, Rates and Service

Would Sell Municipal Bonds Direct to Public.

If financial interests do not bid on Cleveland municipal telephone bonds, if the administration decides to compete with the two existing companies instead of buying their equipment, Councilman E. B. Haserodt, leading the fight in the city council to establish municipal telephone service, will urge that the bonds be sold at popular subscription in $100 lots.

A security franchise will be passed and, if the municipal enterprise fails, these bond buyers would become owners of the telephone property and franchise.

A recent editorial in a financial publication, says the Cleveland Plain Dealer, stating that the city could not dispose of telephone bonds under the competition led Haserodt to suggest the popular subscription scheme.

"The securities would be distributed among people of the city as was done with the street railway securities during the street railway controversy," he said.

"They would be desirable from the investor's standpoint, as, under the home rule amendment, the city could make them good by passing a twenty-year telephone franchise as a security grant.

"I do not believe we should establish a competing municipal telephone system without first attempting to reach some agreement with the Cleveland and Cuyahoga companies."

Allen C. Morse, electrical engineer, has forwarded to Mayor Baker a copy of his report on municipal telephones.

Hamilton Home Case Appealed.

Appeal has been made by the Hamilton (Ohio) Home Telephone Co. from the decision of the Public Service Commission refusing to compel service connections by the Cincinnati & Suburban Bell Telephone Co. with its lines.

It was shown by the latter company before the commission that it had a plant in Hamilton and that service connections with the Home company's lines would destroy its property value.

The Home company says in its suit that it has 3,700 subscribers who desire to communicate with Cincinnati, but that the Bell company refuses to interchange messages and is in a conspiracy with the American Telephone & Telegraph Co.

Regard Indianapolis Mergers as Probable.

The Indianapolis, Ind., board of public works has extended until January 1, 1914, the time when the Indianapolis Telephone Co. will be required to comply with the provisions of the amended franchise granted to it about two years ago.

This extension of time is granted on the ground that a consolidation of the Indianapolis and the Central Union companies is quite probable, in which event the large expenditure for a new bulding, new switchboard and other equipment required by the franchise would be useless. It is announced that only a difference over rates for residence telephones remains to be adjusted to the satisfaction of the board of public works before unification will be undertaken.

It is also pointed out that the legislature of Indiana meets this winter and that there is little doubt that a public utilities law will be passed. This, it is held, will simplify the merging of the two plants in Indianapolis.

Des Moines Officials' Attitude Toward News Companies

The three conditions under which the city council of Des Moines, Iowa, will consent to voting a franchise to the newly organized company there, have been outlined by Mayor James R. Hanna.

"First, we want to be convinced of the need of another telephone system in Des Moines and the value of the automatic over the system now in use," said the mayor.

"Second, we want assurance that this is a bona fide proposition to establish and maintain an exchange and not a scheme to speculate on.

"Third, we want the franchise properly guarded as to service, rates for service and method of disposing of stock and bonds. We want the central office in the city of Des Moines."

The mayor stated that the promoters of the new company must satisfy the city council on these three points before the council will approve the application for a franchise and submit it to the people for a vote.

Although a form of franchise wanted by the company has been filed with the city council, it is said that it does not meet with the approval of that body in its present shape.

"I don't want to take a position as opposing this new company," said the mayor. "But we are not going to proceed and vote a franchise unless we know that the new system will be a benefit to the city and that the present movement is really a movement to establish an exchange."

Report on Chicago Telephones Near.

E. W. Bemis, the expert who has been investigating the situation of the Chicago Telephone Co., with a view to revision by the city council of its rates, has promised to complete and deliver his report within a few days.

Partial Victory for Louisville in Rate Case.

A partial victory has been gained by the city of Louisville, Ky., in the United States district court, in the motion to compel the Cumberland Telephone & Telegraph Co. to refund all charges made over and above the ordinance rates for telephones. The amount involved is between $100,000 and $200,000 and

covers the period from the time the ordinance was passed until the United States Supreme Court upheld it.

Judge Evans has decided that the Cumberland company must pay the excess into court pending a trial of the ordinance rates under the oversight of a special master. This master will be appointed within a short time to collect the money and will then examine the books of the company from time to time until the test period is up. How long this test period will be was not indicated.

The city attorney had asked the court to command the company to refund the money immediately. He contended that the mandate of the supreme court ended the matter entirely and that there was nothing for a lower court to take cognizance of other than to order the master to collect and distribute the money.

The telephone company contends that the rates are confiscatory and that it cannot make money on that schedule. It is to give the company a chance to demonstrate that what it says is true that the order was given.

No Bell Collections to be Made in Memphis.

Following the refusal of the United States Court of Appeals, at Cincinnati, to restrain the city of Memphis, Tenn., from enforcing lower local rates for the Cumberland Telephone & Telegraph Co., officials of the company state that the business of the company will proceed as usual with the exception that no collections will be made.

It was stated that collections will not begin until the company receives advice from the general counsel, who has charge of the case.

The company declines to accept the rates named in the ordinance recently passed by the board of city commissioners and to collect the old rate would subject it to a severe penalty for each collection, in the event of the new rates being upheld by the court.

Attorneys for the city declare that the company would be guilty if it should collect the old rate even when tendered by the subscriber.

The ordinance passed by the board of city commissioners reduced the rent for residence telephones from $3.50 to $2.50 per month and for business telephones from $7.50 to $5. The telephone company applied to the United States court for a restraining order which was granted and an application for temporary injunction was made.

Judge McCall declined to interfere, the restraining order was dissolved and the ordinance thereupon became effective. An appeal was taken to the court at Cincinnati after several weeks spent in a fruitless endeavor on the part of the city officials and the officers of the telephone company to reach a compromise.

This court, while declining to overrule Judge McCall, acceded to the request of the telephone company and advanced the hearing of the case to November 1. The telephone company was represented by W. L. Granberry, general counsel, and the city was represented by C. M. Bryan, city attorney, and Leo Goodman, assistant city attorney.

According to the statement made by telephone officials in Cincinnati the change in the rates will make a difference of between $30,000 and $40,000 in the monthly revenue of the company.

To Accept New Albany Rates.

At a recent meeting of the Albany, N. Y., Chamber of Commerce that body, after a stormy session, voted to accept the proposition of the New York Telephone Co. to reduce rates about 15 per cent. and to postpone further discussion of the question before the Public Service Commission until after May 1, 1913, when the telephone company expects to have the two main plants in Albany consolidated and new equipment installed.

At the meeting of the Chamber the telephone company's proposition was stoutly opposed by John H. Dugan, attorney of the Civic League, who argued that the rates in Albany should be the same as those granted by the telephone company to subscribers in Rochester, Utica, and Troy. Attorney Dugan's motion was lost but at the close of the meeting he announced that he would appear before the Public Service Commission in behalf of the Civic League to argue in opposition to the telephone company's proposition.

The offer accepted by the Chamber of Commerce, to go into effect on November 1, shows the following reductions: Direct line business telephones, from $90 a year to $72; two-party business telephones, from $66 to $60; direct line residence telephones, from $48 to $42; two-party residence telephones, from $36 to $30; four-party residence telephones, no change, $24.

Bell's California Long Distance Rates Considered.

The California Railroad Commission has taken under advisement the application of the Pacific Telephone & Telegraph Co. to change its system of long distance charges from the present county basis to one similar to that incorporated in the parcels post law and that recently suggested by the Railroad Commission for express charges.

N. R. Powley, the company's rate engineer, states that the object of this new rate system is the equalization of charges. He admits that there is an apparent increase of the company's income under this system of approximately 7 per cent.

While the Railroad Commission has expressed no objection to the proposed system of rate charges as regards the application of the block system basis the apparent increase in the income of the company which would result from the charges proposed has caused it to give the subject more careful consideration.

The hearing given on the matter was devoted to questions as to the portions of the plants which should be accounted to the toll business in segregation from the exchange business of local points. The company objected that such segregation was almost impossible.

The commission stated that it would take the application under advisement and, after announcing its decision, give the opportunity for further hearings and discussion.

It appears to be admitted that the present county basis, with its various amendments, has resulted in considerable inequality than the combined charges for its several component distances.

New York Bell to Contest Commission Ruling.

The New York Public Service Commission gave a hearing recently on the complaint of the Metropolitan Telephone & Telegraph Co., of New York City, as to the refusal of the New York Telephone Co., to furnish it with telephone service and to list its name in the directory.

In reply to a question from Chairman Stevens as to why the company had not applied to the commission for a certificate of public convenience and necessity and for permission to issue the $10,000 outstanding stock, H. Lee Sellers, vice-president of the company, said that operations had not yet been started in New York and that the stock had been issued in ignorance of the law to a parent corporation of the same name incorporated in Delaware with $3,000,000 capital. Mr. Sellers agreed to call a meeting of the directors to take action to call in the issued stock and then file the necessary application with the commission.

T. P. Sylvan, representing the New York Telephone Co., said that his company based its refusal to supply the Metropolitan company on the ground that the latter concern was created solely for the purpose of selling securities on the credit of a company of the same name which was succeeded by the New York company in 1896. He said that there were $1,500,000 bonds of the former Metropolitan Telephone &

Telegraph Co., outstanding at that time, which indebtedness now runs to the New York company. He contended that its practical existence had not terminated, although it had legally ceased as a corporation.

After consideration the commission ordered the New York Telephone Co., to furnish telephone service to the Metropolitan upon the complainant complying with all the reasonable rules and regulations of the company and making payment for such service one month in advance. It has also ordered the New York company to place the name of the complainant in its directory of subscribers about to be published, in the usual manner in which subscribers' names are placed in such directory, together with the office address of the company and its telephone number.

The resolution of the commission recited that the complainant is a corporation incorporated under the laws of the state of New York as a telegraph and telephone company; that it has not as yet secured a certificate of public convenience and necessity entitling it to construct its plant in the state of New York, but that it has opened offices in New York, and desires telephone service from the New York Telephone Co., which is the sole company affording telephone service in that city.

The order further recited that the New York Telephone Co., has not presented to the commission any satisfactory or reasonable reason for its refusal to afford service to the complainant.

After the first hearing the Metropolitan company caused the stock which it had issued to be returned to the company and canceled.

The New York company has decided to test the legality of the order in the courts. After the commission's order had been received, the New York company accepted the Metropolitan company's check and contract for the service asked for. Later, however, it sent two representatives to the office of the Metropolitan company and tendered the Metropolitan's check and contract. The New York company was determined, they said, to test the right of the Public Service Commission to compel it to supply telephone service to a rival concern.

H. Lee Sellers, vice-president of the Metropolitan, refused to give up the receipts and vouchers, and at once notified the commission of the attitude assumed by the New York company. The commission will now be required to enforce its order through the courts.

Complains of Poor Service at Albany.

Commander Eckford C. De Kay, military secretary to Governor John A. Dix, of New York, has filed with the Public Service Commission a complaint regarding the service given by the Albany office of the New York Telephone Co. The complaint is based upon the incident of a slight fire which occurred in the executive mansion on the morning of October 17, at 3 o'clock. Commander De Kay says he spent nearly 10 minutes trying to get the operator in order to call the fire department, and that the fireman, after they came, were nearly an hour getting into communication with one of the houses to order an extra piece of apparatus.

Complain of Service at Seattle.

Numerous letters from leading business houses, professional men, and residence houses, are coming in to Charles M. Baxter, attorney, who has filed complaint with the Washington Public Service Commission against the inadequate and inefficient telephone service in Seattle.

The Bell recently bought the plant of the Independent company in that city.

New Jersey Inquiry on Rates.

Following the recent conference, of the New Jersey Board of Public Utility Commissioners, at Trenton, with representatives of the telephone companies of the state at which a number of companies were represented, the following announcement was made by Commissioner Daniels, under whose direction the conference was held:

"In order to standardize definitions of standard and non-standard service and rates, the telephone companies operating in the state are to be requested (1) to inform the commission as to what their practice is as regards the following matters; and (2) to supplement this statement with the reasons which, in the judgment of the companies, justify their practice in the premises.

1. The distinction made between business and residence service. What is the criterion used to differentiate the two? Is any other rate made to a subscriber to both than is made to two separate subscribers to each? Is any intermediate class of service recognized, e. g., service in a physician's family where the same telephone serves for professional and domestic purposes?
2. The combination of toll and local service at a joint rate, some percentage of which is applicable to tolls, and the remainder to local service.
3. Varying rates for local service in proportion to the greater or smaller area covered by the subscriber's contract.
4. Quantity discounts, i. e., affording to a subscriber for a number of separate stations a different rate per station from what is charged to the subscriber to a single station.
5. Varying rates quoted according as the hours per day during which services rendered vary.
6. Varying rates quoted according as the days per week (Sunday included or excluded; for the whole day or part thereof), during which services rendered vary.
7. Seasonal rates, i. e., are rates quoted for certain delimited seasons of the year, such as the summer season, where the rates per month vary from rates per month for similar service rendered all the year round?
8. Location of public pay stations. Under what conditions does the company hold itself obligated to locate such stations? On demand or otherwise? What is the practice of the company in this matter as to securing a return? Is a guarantee required, and if so, of whom? Does the company distinguish between a public pay station and a semi-public pay station, as in a lodge room? How are the particular locations of such stations determined, by accessibility to the general public as determined by the company, or in any other manner? How is the remuneration of the owner of the premises, or the commission of the agent in charge determined, i. e., on what basis?

What is the company's practice as regards station relocations or removals? To whom are they charged? During the pendency of a contract? At or after the expiration of the subscriber's contract? Is the company's practice in this regard set out in the subscriber's contract?

Suggestions are invited on any other topic, or matter, upon which uniformity of telephone practice or definition is desirable, together with the company's reasons applicable thereto."

Philander Betts, chief inspector of the utility division of the board, by December 1, 1912, is to submit to the companies blank forms or schedules on which the companies are to report by January 1, 1912, the extent to which their contracts vary from standard.

Move to Lower Rates in Missouri Town.

The Columbia, Mo., city council has taken steps toward regulating telephone rates there. A report to the council says that the Bell company charges more than it does in any other town of the same size in the state.

Business telephones cost $3 a month and residence telephones $2 a month. Hannibal, Boonville, Sedalia and Carthage telephone rates are lower, and the council unanimously voted a motion demanding that the company appear and show cause why its rates should be higher than those in other Missouri towns.

Refuses to Advance Telephone Suit.

A motion to advance the suit of the Home Telephone Co. against the city of Los Angeles, Cal., has been denied by the United States Supreme Court.

A Quartet of Men Prominent in the Telephone Field

C. BURR FORREST, general manager of the Pomeroy & Middleport (Ohio) Telephone Co., became a telegraph operator at the age of seventeen, continuing at that work, for four years. He then became an inspector for the Chicago Telephone Co. Two years later he was made general manager for the Gallipolis (Ohio) Telephone Co., which position he filled for two years, thrice later assuming the management of this company. In 1899 he went to Charleston, W. Va., as general manager for the Home company. In 1901 he returned to Gallipolis for a year, then accepting a position as traveling salesman for the Kellogg company, and again going back to Callipolis. In 1905 he built the system of the Kingston, N. Y., Citizens, becoming manager and secretary, staid there until 1907, when he went to Pomeroy as general manager. At this time he rebuilt the Gallipolis plant. He is the inventor of the auto-phone, a device whereby telephone connection may be had by automobilists or drivers anywhere along a telephone line, without leaving the vehicle. Mr. Forrest was born in Rutland, Ohio, July 5, 1874. He is a member of the Masons, Elks and Woodmen.

B. YORE, manager of the Dunkirk exchange of the Ada (Ohio) Telephone Co., was born in Rushsylvania, Ohio, in January, 1884, and educated in the Ohio State University. In 1902 he took up switchboard maintenance work for the Central Union Telephone Co., at Columbus, Ohio, where he remained for three years in several capacities, mainly switchboard and P. B. X. work. He then connected himself with the Cleveland Telephone Co. as special P. B. X. and small exchange inspector, in the traffic department. In 1905 he was recalled to Columbus to straighten the cable records after a big fire. From April to July, 1906, he was with the United Telephone Co., at the Rushsylvania exchange, from which he went to the engineering department of the Dayton Home. During 1907-9 he did circuit work and blue printing as a side line. In June, 1910, he took up special wire chief's work for the Central Union, then rebuilding Dayton, under H. C. Courson. A year later he went with the Richmond (Ind.) Home Telephone Co. on cable work, and, in March, 1912, he took his present position. Mr. Yore is well known as a frequent contributor to TELEPHONY.

ERNEST BENJAMIN FAHNESTOCK, president and general manager of the Fahnestock Electric Co., Brooklyn, N. Y., was born in Nashville, Tenn., January 20, 1876. He was educated in the public schools of San Jose, Cal., and entered the service of the American Bell Telephone Co., at Boston, Mass., as a student in the special course of telephone engineering which the company was conducting at that time. Later he entered the employ of the Chesapeake & Potomac Telephone Co., at Washing, D. C., as chief switchboard man. He resigned in 1898 and incorporated the Fahnestock Electric Co., with which he is now connected. The company was organized to undertake the manufacture of telephone transmitters and apparatus for the Independent field, which was later abandoned for the manufacture of telephone and other electrical specialties, in which line it still continues. Mr. Fahnestock is probably best known in the telephone field as the inventor of the Fahnestock spring binding post. He is a member of the American Institute of Electrical Engineers and is also a member of the National Arts Club, of New York City.

JAMES W. CHAMBERS, secretary, treasurer and general manager of the Old Kentucky Telephone & Telegraph Co., of Winchester, Ky., has been in the telephone business since 1895, when he helped organize the Globe Telephone Co., at Winchester. Later the name of the company was changed to the Winchester Telephone Co. About 1899 it, with several others, was merged into the present organization, the Old Kentucky Telephone & Telegraph Co., which owns the exchanges in Winchester and Mt. Sterling, Ky., with about 1,800 telephones connected besides a number of toll lines into the adjoining territory. Mr. Chambers was born in Gallatin county, Ky., October 18, 1863, and was educated in private schools and the Kentucky Military Institute, graduating as a civil engineer. After his graduation he was appointed to a position on the United States Geological Survey, and was located for one season in New Mexico. From 1889 to 1895 he was engaged in the dry goods business in Winchester. He was one of the organizers of the Kentucky Independent Telephone Association, of which he was treasurer for a number of years.

Present Line-up of Bell System.

The table reproduced below is taken from a circular prepared by J. W. Bowen & Co., brokers, of Boston and New York, who have for years specialized in Bell securities. It is here printed as a matter of general interest, and as showing in a fairly reliable manner the changes which have recently taken place in the system of the American Telephone & Telegraph Co. and its associated companies.

"The data on which this circular is compiled," says the folder, "is very largely from official sources, and our calculations have been made with care. Owing to the fact that some data is not furnished to the public by some companies, and to slight differences in the form of data, we do not contend that deductions are as absolutely correct as those calculations on file in the various companies' offices.

"During 1911, great progress was made in rearranging the numerous subsidiary companies of the American Telephone & Telegraph Co. into a few larger units," the folder continues. "Where some nineteen companies were actively dealt in a year ago, there are now only eight. The withdrawal of these stocks from the investment market has been compensated for to some extent by the increase in the bond issues of several of the subsidiaries. The future investor in Bell securities will soon have only the American Telephone & Telegraph Co., and possibly two or three of the larger subsidiaries, and the various bond issues, in which to place his funds."

Western Pennsylvania Association Meeting.

The sixteenth quarterly meeting of the Western Pennsylvania Independent Telephone Association, held recently at Hotel Bartlett, Cambridge Springs, Pa., has been pronounced the banner convention of the association. The enthusiasm was more marked and produced more results than at any of the past meetings. The convention was attended by about 125 representatives of Independent telephone companies of Pennsylvania and neighboring states.

The first day was occupied in the reading of reports of committees, appointment of committees, and general discussion. During the evening the committees met, discussed various topics and prepared reports.

On the second day the meeting was called to order at 9 o'clock by the chairman, Dr. J. A. Haven. The committee appointed to investigate the feasibility of organizing a long distance company advised the appointment of a committee to compile data relative to building lines from Philadelphia to Pittsburgh, and from Buffalo to Pittsburgh, via the most desirable routes. This was done and $500 was guaranteed to pay the expenses of the investigation. It is probable that a company will be organized to build these lines and that the stock of the company will be sold to the various Independent companies of the association. Another purpose of the new company will be to build lines wherever connections are lacking and are needed.

The committee on organization of the long-distance telephone comprises: H. E. Bradley, Philadelphia; E. D. Schade, Johnstown, Pa.; William S. Paca, Oil City, Pa.; H. E. Webb, Pittsburgh; Charles F. Hendrick, Brookville, Pa.; B. L. Moore, Buffalo, N. Y.; Alton H. Appleby, Jamestown, N. Y.; J. Walter Barnes, Fairmont, W. Va., and John Z. Miller, Erie, Pa.

The officers of the association are: President, Dr. J. A. Haven, Brookville, Pa.; vice-president, J. Walter Barnes, Fairmount, W. Va.; vice-president, Henry M. Camp, Rochester, Pa.; secretary-treasurer, H. E. Webb, Pittsburgh, Pa.

The executive committee includes: K. B. Schotte, Kittanning, Pa.; T. J. Shufflin, Butler, Pa.; E. D. Schade, Johnstown, Pa.

SYSTEM OF THE AMERICAN (BELL) TELEPHONE & TELEGRAPH CO. AND ASSOCIA

	Capital Stock	Bonds	Gross Earnings	Net Earnings	Interest	Net Income	Dividends	Surplus	Total Surplus & Reserves	Mai... Int...
1 American Telephone & Telegraph Co.	$320,947,709	$138,185,760	$36,970,229	$33,301,245	$5,567,980	$27,733,265	$22,169,449	$5,563,815	$96,807,600	
2 Bell Telephone Co. of Canada	13,482,890	4,899,000	6,476,848	1,247,814	231,979	1,015,835	1,000,000	15,835	7,589,913	
3 Bell Telephone Co. of Missouri	0	0	0	0	0	0	0	0	0	
4 Bell Telephone Co. of Pennsylvania	0	F	0	0	0	0	0	0	0	
5 Central District & Printing Tel. Co.	0	0	0	0	0	0	0	0	0	
6 Central Union Telephone Co.	0	G	0	0	0	0	0	0	0	
7 Chicago Telephone Co.	27,000,000	5,000,000	12,678,390	2,527,061	264,521	2,262,540	2,160,000	102,540	5,829,422	$4,2
8 Cincinnati & Suburban Bell Tel. Co.	7,850,000	0	0	0	0	0	0	0	0	
9 Cleveland Telephone Co.	3,100,000	0	0	0	0	0	0	0	0	
10 Colorado Telephone Co.	0	0	0	0	0	0	0	0	0	
11 Cumberland Telephone & Tel. Co.		15,989,000	7,372,661	2,474,577	182,345	2,292,231	1,574,412	717,819	9,303,395	
12 Iowa Telephone Co.	6,000,000	0	0	0	0	0	0	0	0	
13 Michigan State Telephone Co.	B 2,285,000	10,000,000	4,642,012	1,003,969	516,026	487,943	C 137,100	350,843	3,723,557	1,5
14 Mountain States Tel. & Tel. Co.	21,727,382	G	5,870,151	1,343,305	277,180	1,066,124	1,002,275	63,849	2,207,188	1,7
15 Missouri & Kansas Telephone Co.	13,627,700	306,000	3,523,032	437,808	437,808	0	0	0	E 0	1,2
16 Nebraska Telephone Co.	4,687,000	0	2,245,505	504,365	147,806	356,559	281,220	75,339	2,331,925	
17 New England Tel. & Tel. Co.	39,178,100	2,505,000	13,849,394	3,130,802	135,315	2,995,487	2,644,521	161,684	11,997,568	4,3
18 New York Telephone Co.	125,000,000	51,752,660	44,236,208	15,223,020	2,395,826	12,827,194	10,000,000	2,827,194	31,993,087	5,6
19 Northwestern Telephone Exchange Co.	6,000,000	0	0	0	0	0	0	0	0	
20 Pacific Telephone & Telegraph Co.	D 18,350,000	33,445,000	16,070,112	3,462,274	2,186,146	1,276,127	C 1,090,000	185,627	7,469,404	5,6
21 Pioneer Telephone & Telegraph Co.	0	0	0	0	0	0	0	0	0	
22 Providence Telephone Co.	3,500,000	0	1,432,699	371,795	156	371,638	280,000	91,638	1,787,701	
23 Rocky Mountain Bell Telephone Co.	0	0	0	0	0	0	0	0	0	
24 Southern Bell Telephone & Tel. Co.	21,400,000	10,000,000	7,202,056	2,278,710	555,981	1,722,728	1,284,000	438,728		2,0
25 Southwestern Telegraph & Telephone Co.	0	Q	0	0	0	0	0	0	0	
26 Southern New England Telephone Co.	8,792,800	1,000,000	2,975,368	644,356	78,362	565,994	461,622	104,372	2,138,290	1,2
27 Western Telephone & Telegraph Co.	0	10,000,000	0	0	0	0	0	0	0	
28 Wisconsin Telephone Co.	0	0	0	0	0	0	0	0	0	
29 American Tel. & Tel. Co., Entire System	379,727,832	241,032,822	179,477,998	51,586,297	13,610,860	37,975,437	25,966,876	12,008,561	146,583,626	58,3

A Including 2,158,454 sublicencees etc.
B Preferred Stock.
C On Preferred.
D Preferred: also $18,000,000 common stock.
E $1,056,667 deferred maintenance.
F Underlying bonds: Chesapeake & Potomac Tel. Co. $1,291,000; Diamond State Tel. Co. $417,000; Maryland Tel. Co. $351,000.
G Called for payment 1912.
Q Underlying bonds Postal Telegraph Cable Co. of Texas, $1,189,000.
H Including 62,657 sublicencees etc.
I Including
J Including
K Including
L Including

VOLUME TIGH

Keystone Statement for September.

The Keystone Telephone Co., of Philadelphia, has issued its statement of income and expenses for September and the nine months ended September 30. The figures compare with those for the corresponding periods last year, as follows:

REVENUE ACCOUNT.

MONTH OF SEPTEMBER.

	1912	1911
Gross earnings	$102,039	$ 97,573
Operating expenses and taxes	50,900	50,576
Net earnings	$ 51,139	$ 46,997
Less interest charges	25,258	24,971
Net surplus	$ 25,881	$ 22,026

NINE MONTHS ENDED SEPTEMBER 30.

	1912	1911
Gross earnings	$901,818	$871,915
Operating expenses and taxes	454,270	435,806
Net earnings	$447,548	$436,109
Less interest charges	226,298	220,750
Net surplus	$221,250	$215,359

Wisconsin Company to Perfect System.

The Chippewa County Telephone Co., of Chippewa Falls, Wis., held a special meeting of its stockholders recently for the purpose of increasing the capital stock. At this meeting the stockholders present unanimously voted to increase the capital stock of the company from $30,000 to $150,000, and to issue this stock for the purpose of making extensions and improvements to their system in Eau Claire, Chippewa Falls, and the immediate vicinity.

The first work contemplated is the rebuilding of the Eau Claire exchange and the installing of a complete automatic plant. The estimates for the Eau Claire plant have been made, and the work will require about 28,000 ft. of duct and approximately 80,000 ft. of aerial cable, making it possible to install a telephone in every residence in the city of Eau Claire.

The company is now demonstrating the automatic equipment and soliciting in the city for contracts. It is proposed to take the automatic exhibition set to Chippewa Falls from there and to commence writing contracts for automatic service in Chippewa also.

The Chippewa County Telephone Co. has operated an exchange in Eau Claire for some years past. The franchise was granted about six years ago.

The new issue of stock has already been partly subscribed. It will be held almost entirely by local people, who propose to make the company strictly a local organization.

May Recommend Municipal Plant.

A committee of Anderson, Ind., business men appointed to investigate an increase in rates there by the Central Union Telephone Co. and also to ascertain whether the Central Union and the Delaware & Madison Counties companies are jointly interested in the local telephone business, will report shortly to the city council.

The committee let it be known that it is ascertaining the cost of a telephone plant with a capacity of 2,000 subscribers, and that it may recommend a municipal telephone exchange for Anderson.

MPANIES, AT CLOSE OF 1911, AS COMPLIED BY BOSTON BROKERAGE HOUSE

Gross Income per Station		Total Stations	Earned per Share	Dividends	Payable		1911 Price of Stock High	1911 Price of Stock Low	Present Market	Note	
	A	6,632,625	9.7%	8%	January 15, Quar.		$153¼	$131⅝	$146	5.5%	1 Dividends of 7½% or more paid since 1887.
$44.90	P	198,529	8.1%	8%	January 15, Quar.		153	140	160	5. %	2 Dividends of 8% paid for 24 years.
0		0	0				117	110	0	0	3 Large majority stock exchanged for American Tel. & Tel. Co. in 1911.
0		0	0	0			0	0	0	0	4 Large majority stock exchanged for American Tel. & Tel. Co. in 1910-1911.
0		0	0				0	0	0	0	5 Large majority stock exchanged for American Tel. & Tel. Co. in 1910.
0		0	0	0			50	45½	0	0	6 Large majority stock exchanged for American Tel. & Tel. Co. in 1911.
40.10		335,652	8.3%	8%	January 1, Quar.		141¼	115	0	0	7 Large majority stock exchanged for American Tel. & Tel. Co. in 1911.
0		62,000	0	8%	March 1, Quar.	T	102½	93½	107½	3.7%	8 Dividends of 8% paid since 1906.
0		0	0				0	0	0	0	9 Controlled by Western Tel. & Tel. Co. which latter absorbed by A. T. & T. Co. in 1911.
0		0	0			T	57½	55	0	0	10 Absorbed by merger into Mountain States Tel. & Tel. Co. in 1911.
32.20	W	238,309	11.6%	8%			159¼	145¼			11 Practically all minority stock exchanged for Cumberland bonds or A. T. & T. Co. stock in 1911.
0		350,000	0				0	0	0		12 American Tel. & Tel. Co. owns large majority.
30.90	H	223,805	21.3%	6%	30, Quar.		101	96¼	101	6. %	13 Large majority of Common stock exchanged for American Tel. & Tel. Co. in 1910.
39.50	S	172,803	7.3%	7%	January 15, Quar.		107	100	105	6.7%	14 Formed July 20, 1911 by Rocky Mountain Bell Tel. Co. and Colorado Tel. Co. and small subsidiary.
33.30	I	436,953	0	0			60	38	0		15 Large majority stock exchanged for American Tel. & Tel. Co. in 1911.
29.50	J	152,874	7.6%	6%	January 10, Quar.		0	0	0		16 Large majority stock exchanged for American Tel. & Tel. Co. in 1910.
44.00	K	421,002	7.4%	7%	March 31, Quar.		165½	137	155	4.5%	17 Dividend rate 6% since 1893 and 7% since 1911.
46.70	L	1,524,024	10.2%	8%			0	0	0		18 Nearly all stock owned by American Tel. & Tel. Co.
0		0	0	0			0	0	0		19 Controlled by Western Tel. & Tel. Co. which latter absorbed by A. T. & T. Co. in 1911
33.80	M	503,626	C 7%	C 6%	Jan. 15, Quar.	C	99¾	92	100	6. %	20 Preferred has paid 6% since organization.
0		0	0	0			0	0	0		21 Large majority stock exchanged for American Tel. & Tel. Co. in 1910.
38.20	V	39,674	10.6%	8%	January 1, Quar.	T	105	92½	110	3.6%	22 Dividend rate 8% since 1894.
0		0	0	0			68	58	0		23 Absorbed by Mountain States Tel. & Tel. Co. in 1911.
40.90	N	339,542	8%	6%			0	0	0	0	24 American Tel. & Tel. Co. owns over 99% of stock.
0		0	0	0			0	0	0		25 Controlled by Western Tel. & Tel. Co. which latter absorbed by Am. Tel. & Tel. Co. in 1911.
34.40	R	93,196	7.1%	6%	January 15, Quar.		132⅞	123	145	4.8%	Dividends average about 6% for 27 years.
0		0	0	0		G	107¾	89	0		27 Large majority both common & preferred stocks exchanged for American Tel. & Tel. Co. in 1911.
0		0	0	0			140	100	0	0	28 Controlled by Western Tel. & Tel. Co., American offered
39.80			7.9%	6.3%			0	0	0		minority share for share in 1911.

ncees etc.
ncees etc.
ncees etc.
ncees etc.

M Including 61,322 sublicencees etc.
P Including 44,570 sublicencees etc.
R Including 1,613 sublicencees etc.
S Including 11,803 sublicencees etc.

T Par $50.
V Including 3308 sublicencees etc.
W Including 62,839 sublicencees etc.

IGHTLY BOUND

The Telephone Inspector and the Troubleman

The Seventh Installment of a Series of Articles Which Deals in an Elementary Manner With Many of the Problems Encountered in the Operation of Small Exchanges—Trolley and Telephone Circuits—Some Experiments and Experiences

By A. E. Dobbs

"Here is a letter from an acquaintance of mine," said Mr. Risk, the manager, coming into the back room, where the men were, "and I would like your opinion of it:

TELEPHONE CIRCUIT AND TROLLEY FEEDER.

"'Dear Sir: Our situation is this: First, suppose a metallic line is strung on poles used by an electric street railway company for about three-quarters of a mile in a city, and said poles are only about thirty feet high. Would the induction be great enough to interfere with conversation, if the lines were placed higher than the trolley wire, and transposed every fourth pole? Poles are about seventy-five feet apart, two feed wires running on the same poles within two or three feet on the telephone wires. Second, on account of the great expense and objections of property owners to our erecting more poles throughout the city, we have the choice of running on the street railway poles or the electric light poles. If we run on the electric light poles, some of the street railway poles will have to be used anyway. What would you advise?"

"That," answered George, "brings up a somewhat difficult question to answer, but it is one that confronts nearly all telephone managers to a greater or less extent. It would be better, of course, if they could erect their own poles and keep as far away from the trolley and electric light wires as possible, the farther away the better; but we have to take conditions as we find them, not as we would like to have them. Perhaps there will be only one subscriber in the section he speaks of. If there should happen to be more, the best plan would be to put a cross arm on the poles, using a double grooved glass, a good grade of weatherproof wire, copper preferred, and tie two wires on one glass. In this way a 10-pin arm would allow him to string ten circuits."

"Do you mean," asked the manager, "that the telephone wires should be as close together as that? With one wire in the upper groove and one in the lower, there would be a considerable escape in wet weather, would there not?"

"Yes," replied George, "there would be some leakage, but not so much as you might imagine. Rain water is not such a good conductor as is commonly supposed."

"Why, I thought water one of the best conductors!" exclaimed Mr. Risk in astonishment. "In seeking a ground do you not look for damp earth, the bed of a stream, or even a well, if a water pipe cannot be obtained?"

"Yes," responded George, "because damp earth is much better than dry earth, which is generally a pretty fair insulator. But I have found soil so constituted that even dry dust would make a pretty good ground. But you must remember that I said rain water. To prove that this is the case, we will make a measurement right now. William, go across the street and get me a bucketful of cistern water.

"Now this water," he continued when Will returned, "has been in contact with brick and cement and is therefore not so pure as when it fell from the clouds, but it will answer our purpose. Take two pieces of this rubber covered wire and scrape the ends back for about an inch. Now pour that water into this wooden pail and bring it over here to the testing set."

George had persuaded the manager some time previously, to purchase a portable Wheatstone bridge and galvanometer as part of the office equipment, and he now proceeded to take his measurements with it.

To the surprise of Mr. Risk and the astonishment of Will, the measurements with current from six dry cells showed a resistance varying from 20,000 to 30,000 ohms, even when the wires were placed only an inch apart.

"Well, I'll be hanged!" exclaimed the manager. "I'll see that care is taken in driving ground rods on telephone lines that I have to do with, so that a good ground is had."

"A very good resolution," said George. "It must be remembered that a ground rod has much more surface than the ends of these wires. Then water containing various kinds of soil in solution or suspension, possesses much higher conductivity than the comparatively pure water we have just been experimenting with."

He then proceeded to show that by mixing mud, various kinds of salts, lime, etc., with the water, its resistance was very much decreased. During this little discussion Mr. Risk had not lost sight of the original subject and he now wanted to know if two wires run on one glass would not be crossed continually.

"It depends on who strings the wire," answered George. "If the wires are pulled up tight and evenly spaced, they can be easily run two inches apart."

"Hold on," chipped in Will, who wanted to be exact. "The grooves in those insulators are only an inch and a half apart."

"True enough," replied George, "but with one wire tied on the inside and the other on the outside of the glass, they would easily be two inches apart. If you remember correctly, I said the best grade of weatherproof wire should be used in this kind of work, although I can string bare wires at that distance and never have any trouble with them. You might even use one bare and one insulated wire. It would matter little to successful telephone working if the insulation between two wires of a metallic circuit should fall to 30,000 ohms in damp weather.

"Another advantage of that plan is that by stringing two wires on one glass, continuous running transposition can be made by stringing the reels or coils across each other in every section. Besides, these poles are only 75 feet apart, which makes it an easy proposition." George here hastily

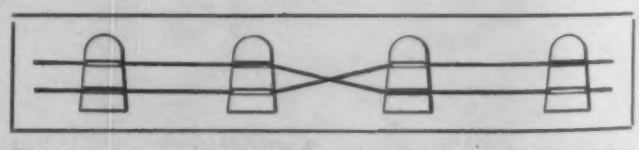


Fig. 10. Running Transposition with Wires on One Insulator.

drew a sketch (Fig. 10) which showed the wire passing on the front and back of the insulator. For the sake of clearness he did not show the tie wires on the insulators.

"That is quite a scheme," said Mr. Risk, doubtfully, "but it doesn't look very safe to me. It seems to me that these wires would be very close together."

"Yes, but you never did any line work in New York in the old times before they had any underground service

there," said George. "We used to place wires as close together as we could place knobs and insulators. Much of it was very poorly strung and in long sections, in some cases as far as 300 feet."

"Did you not have some trouble with that kind of work?" he queried.

"Yes, to be sure, we had lots of trouble, but the trouble account was very small considering the way the wires

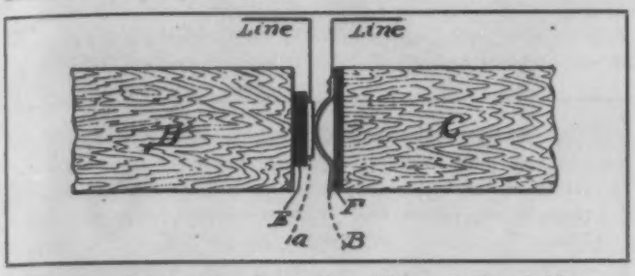


Fig 11. Scheme for Connecting Wires on Drawbridge.

were run. I never used to look for trouble in the places where I knew the wires were tight. The advantage of placing the wires of a metallic circuit so close together," George continued, "is that their mutual induction and constant transpositions tend to neutralize any foreign influence in their immediate neighborhood.

"I would also say that if no more than one line is likely to be built to the neighborhood of which your friend speaks, he can put a single bracket near the top of the pole, using the double grooved glass I have mentioned. But if the lines are to be increased in that direction, he can keep farther away from the feed wires by using a 10-pin cross arm. In order to get his wires tight and even, he should first string out a half a mile of it and then pull them both together as tight as they will stand, then go back and tie them in before the strain is taken off. I hope, though, that he will get business enough in that neighborhood to build a pole line of his own.

"He might even make arrangements with the street railway company to set poles of his own in place of theirs, and in this way be able to get up at least 10 feet higher than the trolley feeder. Of course, I am laying down this advice on the supposition that he wants to give good service and obtain a quiet line. In places where they are not so particular, linemen will frequently nail two brackets, in some cases even porcelain knobs, on the pole above the trolley feeder and run out with bare wire, using no transpositions at all."

"Would it not be better to run those wires further apart?" queried the manager, who still seemed a little doubtful of this plan.

"No," replied George, "for then the feed wires of the railway system would not affect them both equally. The object in running them close together is to expose them both to exactly the same inductive influence, whereby the effect on one wire is largely neutralized by the same effect on the opposite wire."

"Could we not run a circuit alongside of a trolley road for a hundred miles?" asked Will.

"Yes," responded George, "by making the proper number of transpositions; using some non-inductive wire, such as copper, aluminum or phosphor-bronze; keeping the line absolutely free from the ground; and keeping the line as far away from the trolley road as possible. Then there are other details to be considered, such as distance between wires, kind of insulators to use, etc. Do not forget, however, to insulate the line well, for alongside a trolley road the leaf of a tree may become a serious disturbing factor."

"I was asked the other day how to get a line across a drawbridge so that the line would open and close with the bridge," remarked Mr. Risk.

"Why not get some rubber covered wire and throw it in the river so that the line will stay closed all the time?" asked George.

"I don't know."

"Well, knowing nothing of the conditions, I can tell but very little about it except about one plan sometimes used by trolley roads under similar conditions. In this sketch (Fig. 11) we will suppose the break between *C* and *D* to represent the connection between the ends of the draw-bridge. In this case, the copper plate *A* is placed upon a block of insulated wood coated with asphaltum from which one line is connected. The part *B* is likewise mounted upon a block of insulated material. It consists of a spring fastened at the upper end and free at the other which, when the bridge is closed, firmly presses against plate *A*. Of course, you can see that when the draws *D* and *C* are open the line is also open and vice versa."

"Here is still another one," laughed the manager, who was not rushed with office work. "Can you suggest some test by which I can find out if six bridging bells which I have, will ring each other in multiple through a line resistance of 2,000 ohms?"

"I can only suggest a rough and ready test," answered George. "As a general thing when tests of this kind are required, the construction man does not possess a graded resistance box, or any other kind within easy reach. The method shown by this diagram (Fig. 12) is sometimes used. It is satisfactory enough for all practical purposes, although it is a severe test. Take a wooden or paper pail *B*, and fill it with rain water, or at least with water that is soft and comparatively pure; connect up the telephones, 2, 3, 4 in multiple, placing the bucket *B* between No. 1 and the others in the series through the line.

"Let the two ends of the wire extend into the water not to exceed one-quarter of an inch; you can now feel certain that you have a water resistance of at least 10,000 ohms, or as we have seen, it may be much more. If the bells 2, 3, and 4 ring through this resistance, you can feel reasonably certain that No. 1 will do its work on the line.

"The difficulties under which a telephone will sometimes do its work," continued George, "are shown in a case that once came under my own personal observation.

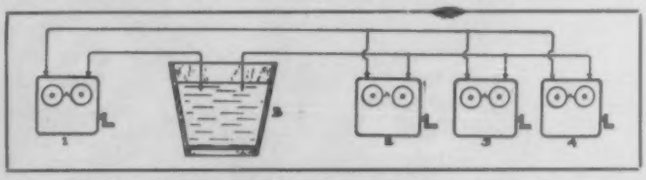


Fig. 12. Circuit for Making Generator Ringing Test.

"The line was a grounded one, built through a timbered and swampy country for about 25 miles. Iron wire having a resistance of about 26 ohms per mile was used and in this case 10 telephones were bridged across the line. The distance between stations No. 1 and 3 was about 11 miles. Half a mile from station No. 1, the wire was broken and at least fifty feet of it lay on wet, boggy, ground and ten feet in a stream. Between stations No. 1 and No. 2 a fallen tree had removed the wire from its pin, and pushed it down into the mud of a swamp lying on the same stream, while half-way between stations No. 2 and No. 3 was a cross with another wire, one end of which as lying on the ground. Added to this was a considerable leakage

(*Continued on page* 658.)

Practical Subjects—Letters and Discussions

Letters From an Old-Timer to the New Troubleman.

Mr. Troubleman,

Dear Friend:—Now we come to "noisy lines." If you do not know your business and get some noisy line or telephone troubles, you will be strictly up against it. You can see grounds, shorts and crosses but you seldom can see noises successfully. You must know the different conditions that cause them; work them down until you only have one left; then find it.

Constant and intermittent noises on lines or in telephones have four causes, induction, grounds, partial opens and partial and swinging shorts. Induction, you will not be able to do anything with as there are only two cures for it. One is to get away from the offending current, the other is to transpose your lines if your leads are open lines. If the lines are in cable you have a pretty constant trouble unless you can move. Ground noises are cured by taking off the ground. Partial opens are cured easy enough after you find them. Your voltmeter tells you about partial and swinging shorts, the same as grounds. So that leaves the "partial open" troubles as the most important to talk about just now. But then when you get right at it and are positive what is making the racket, it's easy. In fact it is all easy, it is one continuous holiday.

Here is a case of a young man of my acquaintance who came around and said quite boastfully that he had been in the telephone business four years and ought to know something about it. It was my pleasure to see him on several cases of trouble and by the foolish things he said and did, I would guess that 44 years would just about make a second-class troubleman of him. On a noisy line, he discovered a piece of wire hanging on a loop. He took the wire off, but somehow the line was just as noisy as ever. On another noisy line which he had, the installer had bridged the line wire from ringing post to line post, instead of from the line to the ringing post as he had often seen them. Then he said, "Who ever saw a telephone hitched up this way, no wonder the line is noisy." He changed it to suit himself, but for some reason or other, which he could not explain, the line was as bad as ever.

Now right here, dear friend, I want to tell you a secret, something which may do you good. Don't ever brag of the number of years you have been in the telephone business. If you do, some little fellow who has seen between the covers of a couple of books or so and perhaps has had a couple of years of practical experience, may come along. He is the boy who will make you feel like mighty small onions with your ten, fifteen or twenty that you have been hooting about. Every time a man says, "Years' experience," it reminds me of two farmers. One had 500 acres of land and the other 100 acres. The one with the 500 acres was always bragging of his big farm and the other bragged about his large crops. So you, if you have got to tell things, tell about results that you have got, not about a whole lot of balderdash which is neither convincing to the other fellow nor beneficial to yourself. Make your years deep instead of many, the business demands thinkers instead of talkers.

A noisy line caused by a ground can not be cut out by going on with a receiver. With a partial open you can cut it out, providing you get on between the bad place and the exchange. Common partial opens are due to copper wire being connected to iron, poor soldering or no soldering at all, and poor splices in loops and lines. In fact any splice at all that is not well made and soldered, is laying up trouble for some rainy day. It may be six months, it may be two years, but don't forget it is coming.

Another trap you can fix for future noisy lines, is to tape up joints where they are exposed to the weather. Tape gets water-soaked and does not dry out very easily, corroding and rusting out any metal that it is meant to protect. I will tell you of a few troubles to illustrate it. A long line had four telephones on it. The last two were noisy and would not throw out the supervisor light, it required nearly a dead short to do it. Knowing the line pretty thoroughly I went to the suspected spot. Everything looked good and solid, good line, good splices and all. After some difficulty I chased the trouble down to what looked like a good splice. I opened up the splice and found a coating of dirt and corrosion in the splice. After scraping the wires clean and making up the splice again, my trouble was cured.

TO WIRE CHIEFS AND MAINTENANCE MEN.

Clearing of troubles which occur in your exchange, inside or outside, may be made the subject of short, practical letters which will interest other telephone men These TELEPHONY *will gladly publish, if illustrated by diagrams or photographs. Simply write a description of the nature of the trouble, tests and location, cause found, and method of repair. Payment will be made for all letters published.*

Another one. Every few days there would be a complaint of a line being noisy in the morning, but every time a man went on the trouble, it would test O. K. It was quite a long loop with nothing that looked suspicious to the eye. Finally the loop had to be taken down and a beautiful, neatly taped splice was found. The wire was so corroded that it fell apart, all that was holding the ends was the pretty taped splice. After the loop was put back properly, nothing more was ever heard from that line. In another case a bad noise was found in a cable box. One side of a fuse connection did not fit tightly and corrosion started caused by the continuous arcing of the current. I could go on indefinitely telling you about noisy line troubles, but when they are sifted out, the causes would be primarily the same.

Noisy telephones are another proposition. If you chase your noise up to the telephone you have it cinched. Here you can use your receiver. Get back of your transmitter connections for noise there, also go on your receiver connections. Perhaps you may have a bad cord. Go over the line connections. You will often find them loose caused by constant jarring or perhaps by use or other surrounding conditions. A noisy line that only comes on occasionally is sometimes the sticker. When you go on them and find them O. K., get rings and make tests repeatedly.

Many times you bring the noise on by working on the line. Many a line I have been on which looked and tested O. K., that I have brought on the trouble by working on it. Then I could locate it easily.

Yours very truly,

Fred Dewey.

Results from Pay Station Signs in Foreign Language.

One Philadelphia druggist's store is located in a neighborhood where there is a large foreign population, principally Italians and Jews says the Telephone News. Knowing that a comparatively small percentage of these had telephone service in their homes or business places, the druggist arranged for

a two-compartment Bell telephone booth. The receipts were fairly satisfactory to the company but not to the druggist. At his request the company had a triple sign in English, Italian and Yiddish painted on two windows of this corner store.

For three months prior to the placing of these signs, the receipts had shown only a gradual growth—less than ten per cent. The first collection, made one month after the sign work was completed, showed an increase in receipts of 118 per cent. The three following collections showed respectively 73, 60 and 174 per cent. increases over the no-foreign-sign period. The gains below 100 per cent. were during months when religious holidays lessened the number of business days.

Peculiar Switchboard Cross—How Located and Cleared.

The trouble reported was that an order circuit was crossed with a position of a board numbering 22 positions. The circuits are very simple but due to the number of multiple taps, the chances of trouble of this nature are quite large.

Button sticking being the most common, I first gave my attention to this but found that the buttons were all right. Next I directed my attention to defective insulation or bent lugs at terminals of key springs and this failed of results. I then disassembled the key to look for springs crossed by dirt of a low resistance nature or a defective bushing. While the key was disassembled, the cross was still apparent by cross talk from order circuit. The result of all these efforts set me thinking in earnest.

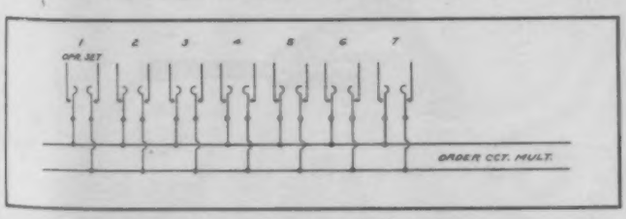
Now there appeared to be but one more possible place for the trouble and that was a cross in the keyboard form which contained the operator's circuit wiring and wires to the order circuit from the multiple tap; so I lifted the wires from the multiple connectors and tested the operator's circuit once more but found no improvement.

Before proceeding further, let me explain another feature of this board without which the reader will be at sea as much as I was for about 10 minutes. The iron framework or at least part of it was not grounded as is found in general practice. This fact I discovered by accident and it gave me the loop hole I had been seeking.

I reasoned that some one of those 22 positions was crossed with the framework by the tap from the multiple and that it also might be true of the wiring of operator's set which had been reported. This I found to be the case by applying a four-volt, grounded battery to each circuit, that is the main lead of the multiple and the wiring of operator's receiver, and picking them up with my testing receiver grounded on one side and by touching the frame with the other, getting a click through in each case.

The operator's set was easy to clear by re-insulating the wire which had been frayed from raising and lowering keyboard, the form resting against the sharp corner of the frame.

Then I set about to clear the order circuit, which was



Order Circuit Showing Multiple Taps.

crossed in one or more of the remaining 21 positions, by the shortest route. There were two methods which were equally good, but I will show only the one which was employed.

I first grounded the frame of the board and tapped the multiple to a grounded 24-volt battery through a 150 ohm relay. Then with the aid of a portable galvanometer, I proceeded as indicated in the sketch, with the galvanometer taps connected, one side to the multiple nearest the source of battery and the other side to the multiple connector of the next position. The X mark shows the location of the fault, therefore a deflection of galvanometer needle will be obtained with the connection shown. I proceeded in this

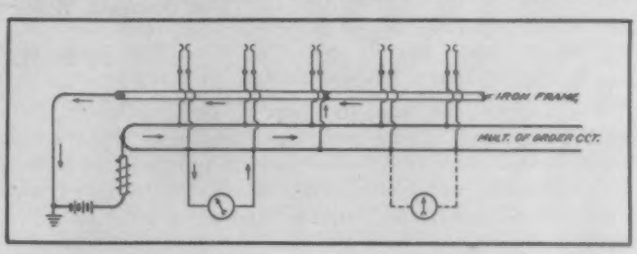


Diagram of Connections for Testing for Order Circuit Trouble.

way along the multiple connectors until no deflection was noted, which indicated that the trouble was passed.

The trouble was found to be the same as that in the operator's circuit and was repaired in the same manner.

A sensitive receiver may be used in place of galvanometer in case a galvanometer is not available.

New York. F. J.

Some Tests and Deflections of Concrete Poles.

At the annual meeting of the Association of Iron and Steel Electrical Engineers at Milwaukee, R. A. Cummings described methods of forming concrete poles and reported tests and deflections of the finished structures. He recommended a mixture of one part of Portland cement to six parts of coarse and fine aggregate, but for casting the poles in a horizontal position advised against too liquid a mixture, the constituents of which, he warned, may tend to separate out, reducing the strength of the pole. Within 28 days poles should be able to withstand a test load of 2,000 lb.

For wind-pressure calculations an assumption of 100 lb. per square foot, equivalent to a 100-mile gale, is usually ample. He cited some tests performed by the New York Central Railroad, using a locomotive and dynamometer car through a four-to-one pulley reduction, in which two 24-ft. poles designed to withstand 2,000 lb. with a safety-factor of four were tested to destruction. The first pole withstood a maximum of 7,810 lb. and was deflected 2 ft. 1 in., while the second carried 8,125 lb. and was deflected 2 ft. 2.5 in.

Comparing the cost of chestnut and concrete poles on a basis of 25 years' service, including labor of renewing, etc., assuming chestnut to have a life of 12½ years, Mr. Cummings gave the values in the accompanying table for various heights:

	25 ft.	30 ft.	35 ft.	40 ft.
Chestnut poles	$60.45	$71.35	$84.81	$101.51
Concrete poles	35.50	45.25	62.50	84.25
Saving effected in per cent.	40	37	26	17

How He Won Out.

It was one of the "Tail enders" of the field force who approached the "Star commercial agent" one day, says the Bell Telephone News, and asked "How do you manage to secure so much business while I just secure enough to hold my position?"

"Well," said the "S. C. A.," "there is a secret about it. I have been in the business a good many years and I have finally solved the selling puzzle. You are a new man and I am willing to give you a pointer; but remember it is a secret."

"I will," said the "T. E." beaming with eager anticipation, "Now for the answer—how do you manage to be so successful?"

The "S. C. A." dropped his voice to an impressive whisper, "I'll tell you." he said, "I always make it a point to wear out the soles of my shoes, instead of the seat of my trousers."

Practical Telephony for the Practical Exchange Manager

The Sixth Installment of a Series of Articles Relating to the Management and Operation of a Moderate Size Exchange — Some Data on Telephone Poles — Their Preparation — Methods of Stringing Wire — Construction Materials

By H. R. Van Deventer

The majority of opinions seem to advocate 25-ft. poles with 7-in. tops. There are, however, rural lines giving good service with 18-ft. poles having 6-in. tops and there are thousands of country lines having 18-ft. poles with only 5½-in. tops, but this is getting pretty near the limit.

Poles, 25 ft. in length with 7-in. tops, will carry 20 No. 12 wires under average conditions, and this may be considered standard construction.

The cost of poles varies greatly and depends upon the conditions necessary to get them out. If there is considerable timber within a few miles of the line, they may be bought peeled and delivered for about 75 cents each throughout the South. If they have to be bought from a dealer and shipped by rail to the nearest station and then hauled to points along the line, they may cost $2.50 each or more. Some poles cost as little as 25 to 30 cents apiece, others $3. This is entirely a local proposition and the prices vary widely in each case. Methods of delivering poles to location by wagon are well understood, and no description of them will be given.

POLES.

All poles should be peeled not only for the sake of appearance but because they will dry quicker and more thoroughly. A pole that is thoroughly dry and well set will last much longer than one that is set when green.

Roofing and gaining should be carefully done. There are on the market a number of devices that will do away with cutting the gain but no great saving is effected by using these on rural work. The pole must be roofed anyway, and it takes very little more time to cut the gain. With some of these devices, the braces may be omitted. The steel gain may be depended upon to take the place of braces while the poles are new and sound, but with the least shakage or decay of the pole around the gain, the arm will lose its hold and become one-sided.

The poles should be creosoted. Two coats of creosote applied with a brush, one foot above and two feet below the ground line, will add much to the life of the pole. This should be applied only when the pole is thoroughly dry. It does no good to creosote the pole all the way down to the butt, as the only place where rot takes place is at the ground line. Tops and gains should receive at least one coat of creosote. Creosoting in this manner costs about 12 cents per pole. The best poles are those that are creosoted all over, but this is too expensive a proposition for the average rural line.

The average number of dry poles, 25 ft. with 7-in. tops, in a carload is 75. The poles should be inspected to see that none of them are split, as they are unloaded from the car. It is well to unload on skids as they facilitate handling, painting, etc., and keep the poles off the ground.

The smallest "dead man" should be of sound wood and not smaller than 8 ins. by 5 ft. Where special guy anchors are used, it is well to select an approved make which has been thoroughly tried out in practice. In some localities the use of anchors will be found a saving over the "dead man."

The best wood for poles is an open problem. Juniper and cypress are the woods generally used in the southern states. Juniper is more uniform in its lasting qualities and therefore averages better than cypress. Some cypress poles will last 15 years, while others will rot off at the ground in four or five years. There is no telling how long a cypress pole will last.

Standardize as much as possible. Standard 10-pin arms are bored for 28-in. braces. It is well to use the same size braces for 6-pin arms so that when they are replaced with 10-pin arms, as often occurs, the braces are available for further use.

It is not good practice to use 8-pin arms in the same line with 10- and 6-pin arms owing to the different positions the wire occupies on the 8-pin arms. It is also advisable to standardize on one size of guy wire; 5/16-in. Siemens Martin strand is sufficiently strong for any guy on a 20-wire line.

A few words regarding methods will not be out of place, as they will enable costs to be more accurately estimated as to "time."

In stringing a metallic circuit, where the wagon can be taken along the line and where there are three or more linemen, the best method is to mount the pay out reels on the wagon and let the wire pay off on the ground as the wagon proceeds. Of course, the wires must be securely attached to the first pole before starting. As soon as the fifth pole is passed, the wagon should be stopped and the linemen should carry the wires up the second, third and fourth poles and lay them on the cross arms and brackets.

While the linemen are doing this, the men on the wagon should rig the blocks and equalizer to the bottom of the fifth pole and to the wires, so that by the time the linemen place the wires on the poles, the men at the wagon should be ready to pull them taut. As soon as the wires are pulled to the right tension, they should be tied to the insulators, after which the blocks are slacked off. The wagon and the linemen then move ahead and proceed as before.

Time will be saved in not placing the blocks and equalizer in the wagon at the end of each pull; simply pull them out full length and hook one block on the back of the wagon and let them trail behind. A piece of wire or rope about four feet long with a loop at each end, will be convenient for hooking the block to the pole on making a pull. The insulators may be distributed by the driver.

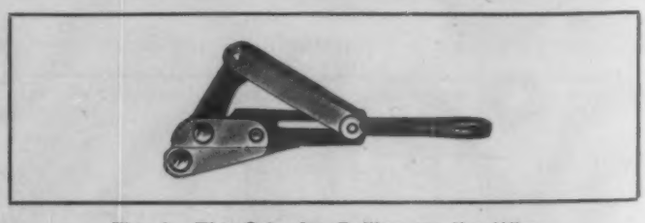


Fig. 9. The Grip for Pulling up the Wire.

Where there are less than three linemen, good time can be made by stringing off half a mile at a time. By means of a light pole about 15 feet long with a notch at the top, a man can lay the wire up on the cross arms from the ground about as fast as if can be reeled off from the wagon.

In this case one lineman goes ahead with the wagon and helps to lay up the wire. The other lineman waits at the second pole until he sees the wires pulled up and then follows along the line, "tying in."

The lineman at the wagon should tie about three poles back to hold up the slack. Another half-mile of wire should then be reeled off and laid up the poles as before.

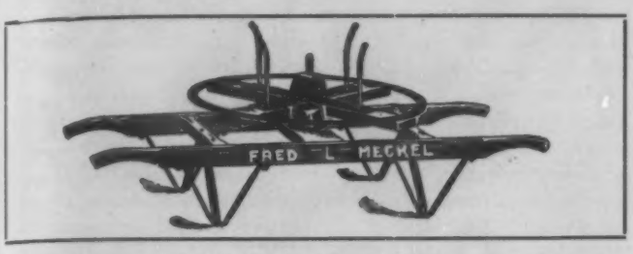


Fig. 10. The Pay-out Reel.

After the first half-mile, the lineman will have enough to do so as to be in sight of the wagon at dinner time. Where the wagon cannot be taken along the line, hand reels will have to be used. Two men will be needed to carry each reel along the line and pay off the wires. The laying up of the line can be done the same as when reeled off the wagon.

Where more than two lines are to be strung, it will be best to set up the reels stationary at points along the line and pull the wires out by means of a running board and a long rope. One reel will be required for each line to be strung. It is unnecessary to describe this method, as few country lines require more than two lines at a time.

Usually construction data is prepared in the form of a specification, taking up in detail each point to be covered. The data just given is taken up in the order in which the situation presents itself to those interested in building country lines. The first question which occurs is a mixed one composed partly of "what is necessary to build these lines?" and secondly, "how they are to be built?" The foregoing attempts in a measure, to give some data on which some figures can be made. Of course the figures will greatly depend upon local conditions.

Construction Material.

Of material, nothing should be used but the best. Insulators are offered in two forms, glass and porcelain. Between these there is no choice so far as efficiency is concerned.

The No. 9 Pony glass insulator is the one most extensively used in this country. The porcelain insulator has been but recently developed and in consequence there are not so many of them used. They seem to be entirely satisfactory and to possess just as good insulating qualities as the glass. Also they are much less liable to breakage in handling.

The great enemy of the insulator is improper "tying in" where the wire is bound too tightly and the glass cracks due to the expansion and contraction. Another enemy is the small boy with an air rifle, or a sling shot, who breaks many insulators on the country lines.

As to the quality of wire that known as "best best" is probably the best for all-around service. There is a better grade than the "best best" known as "extra best best," but this is seldom used. Ordinary "steel" wire, even if double galvanized, should not be employed for telephone work as its resistance is too high. There are cases however of long river spans and other special circumstances where steel wire should be employed, owing to its high tensile strength.

The various grades of wire refer to the conductivity and not to its lasting qualities. All grades are alike as to galvanizing. It is not necessary to make tests to determine the grade of telephone wire, as practically all makes on the market today are uniform so far as conductivity and galvanizing are concerned.

To make tests for conductivity is beyond the scope of the average purchaser. The galvanizing tests are easily made and instructions for making them will be furnished by the wire manufacturers.

Purchasers of wire often make the mistake of confusing the quotations given them by a telephone supply dealer with those obtained from a local hardware merchant who invariably quotes on galvanized fence wire. While this looks the same as the BB telephone wire, it is not either in conductivity or in galvanizing. The result is that lines built of fence wire are not only poor from a transmission standpoint, but soon give trouble owing to rusting and physical disintegration of the wire.

As wire is a commodity, the price of which is governed by the quantity in one shipment, it is advisable to calculate carefully the total quantity needed and then place one order covering it, thereby obtaining the very best price. Often a nice sum can be saved by this method, instead of dividing the purchases and thus paying the maximum price.

This advice also applies to insulators, which are usually sold in barrels containing 350 glass, or 400 porcelain. Less than a barrel should never be purchased as there is a charge made for breaking the package and this makes the piece price of the insulator considerably higher.

(To be continued.)

Will Spend $150,000 Under Certain Conditions.

As briefly announced in Telephony last week, providing the Bay City, Mich., council will grant certain changes in its franchise asked by the Valley Home Telephone Co., that concern will spend about $150,000 in the erection of a modern plant in that city. This proposition has been submitted to the council by representatives of the telephone company.

The amendments to the franchise provide for an increase in rates, but it is stated by the representatives of the Valley company that the increase would not be effective until the new plant had been built. No extension of the life of the franchise is asked. If everything goes through satisfactorily the company promises one of the best plants in the state.

The following is the proposed basis for the new rates:

"Rates per annum for the telephone service that may be changed by the company during the life of the franchise, shall be based upon the number of telephones in service and working in the company's Bay City exchange at the time payment of the rental is asked for. No telephones except those directly connected with the company's switchboard shall be considered as being in service or working and subject to be counted.

These rates and the number of telephones governing same are as follows: 1,500 telephones, or less, in service, $30 for business and $24 for residences; 1,500 to 2,400 telephones, $36 and $24; 2,400 to 3,000 telephones, $42 and $27; 3,000 to 4,000 telephones, $48 and $30; 4,000 to 6,000 telephones, $54 and $35; in excess of 6,000 telephones, $60 and $40.

Party line service with not to exceed four parties on a line shall be furnished at three-fourths these rates."

The question will be considered at an early meeting of the council.

Improvements by Fort Wayne Company.

The Home Telephone & Telegraph Co., of Fort Wayne, Ind., is practically rebuilding its system in New Haven, Ind. An additional story is being built on the New Haven State Bank building, which will be occupied by the company as soon as completed. A new switchboard will be installed there. The work will probably be completed within sixty days.

Department of Railway Telephony

The Sixth of a Series of Articles on Telephone Train Dispatching Takes Up the Question of the Location and Installation of Equipment at the Way Station—Contributions from Readers will be Appreciated.

Installation of Dispatching Equipment in Way Stations.

By John A. Kick.

The way station wiring should be standardized, placing each part of the equipment in the same relative position at all stations. Switches, fuse blocks, arresters, etc., should be numbered or otherwise designated at stations where more than one of each is installed and the wire chief provided with a blue print showing the standard mounting and wiring. Installations made under standard specifications provide means for quick testing with dependable results as anyone who will answer the telephone can carry out the instructions of the wire chief who has a print of the standard mounting and wiring.

In making the initial installation, one must keep in mind the prospects for additional circuits and so arrange the first installation as to provide space for the additional equipment, thus avoiding rearranging and re-wiring to place the second equipment later.

For the way station telephone set, many different types of arms and desk stand equipments have been devised. It is rather difficult to follow any standard assembling of the telephone set, as almost every station presents an individual problem of providing the proper table space to make a standard installation. The transmitter arm should be so mounted as to allow the transmitter to swing into a position directly over the center line of the operator's working position. Where a transmitter key is used, the containing cabinet should be mounted on the desk so as to bring the key about 17 inches from the front edge of the table and about 9 or 10 inches to the left of the center line of the operator's position. Much depends upon the proper arrangement of the transmitter position.

The local battery should be placed in a wood or metal box which will be proof against the accumulation of dust. The box should be located so the maintainers can readily inspect it. It is not good practice to place equipment under a table or desk where an inspector will have difficulty in inspecting or making repairs. Inspectors traveling on local freight trains must make quick inspections at many stations and in order that they may do successful work, the equipment must be arranged with this in mind.

Any part of the equipment which is mounted under the table will receive rough usage, be difficult to repair and will be given half-hearted inspection. The same equipment mounted on the table or wall will be safe and receive full attention. If avoidable, none of the operative equipment should be mounted on walls or partitions subject to vibration due to any cause, as many cases of trouble have been traced to this source.

Test patching panels are required where more than two circuits are used. They may be placed one at each station or at intervals of 20 to 25 miles and intermediate stations arranged by a series of switches to transfer equipment from one circuit to another. The placing of test and patching panels at such intervals avoids cutting the line wires at every station and of course keeps the line in a better physical and transmission condition. Stations intermediate to test stations can be arranged for giving a "short" cutting out or transferring the equipment from one circuit to another and no more can be required.

Every equipment should be provided with a cut-out switch for the purpose of removing it from the line when the station closes and for testing for equipment troubles. Many installations have this switch omitted, using the fuses for that purpose. But the continual handling of the fuses proves more expensive by reason of breakage and wear, than would the original installation of a switch. Cut-out switches, arresters and fuses should be mounted where the attendant can reach them without using a ladder or a chair. The idea of placing any and all equipment in a place easy of access is one which should be encouraged.

I believe there should be absolutely no equipment or apparatus under operators' tables and desks and that selectors should not be mounted in attics and basements with the idea that they are out of the way and that only the bell is needed in the office. The inspector must occasionally make repairs and adjustments and is to a great disadvantage when the selector is in some remote corner from which he cannot talk to the dispatcher through the operator who asks for rings, etc.

Telephone Dispatching on the Chicago & Eastern Illinois.

The Chicago & Eastern Illinois Railroad is installing telephone train dispatching and message equipment on two of its divisions, from Evansville to Danville and from Danville to Yards Center, Chicago.

The first named circuit is for train service only, while on the Danville to Chicago circuit the dispatching wires are paralleled by a message circuit. The entire equipment is furnished by the General Railway Equipment Co. and includes some of the latest developments in auxiliary apparatus for railroad telephone service.

The equipment includes 125 local battery Gill selector outfits with the necessary dispatcher's terminal sets and Gill automatic calling keys, wire chiefs' test panels, and full station apparatus.

The installation also includes the Equipment company's recently designed transmitter arm. This is not only conveniently arranged as a desk or wall fixture but possesses advantages in case of the replacing of the receiver and connecting cords which may be done by the operator without calling upon the repairman.

A motor-generator set, consisting of a 500-watt, 320-volt motor and a 350-volt generator, is being installed for charging the storage batteries of which 300 cells of Universal type were furnished for the operation of all the selector circuits.

Nickel Plate Installing Telephone Circuits.

The Nickel Plate Railroad expects to have its telephone system of train dispatching between Fort Wayne, Ind., and Bellevue, Ohio, completed by December 1, according to recent reports. The work of installation of the telephones has been started from Fort Wayne and is being pushed east as rapidly as possible.

Merger in Iowa Town Confirmed.

About a month ago announcement was made of the probable consolidation of the Mutual and Bell telephone systems of Shenandoah, Iowa, under the ownership of the Mutual company. It is now announced that the consolidation will take place about the first of November.

We're growing so fast that our recently enlarged plant is again too small and contracts have been let for further extension to increase our production.

The moral of that is, that the manifold advantages of our Copper Clad products are fast becoming recognized by the entire wire using field, and that YOU should be sharing in the good things we are passing around.

Copper Clad don't rust, don't break, and will save money for you.

Manufactured exclusively by

Trade Mark
"Weld Clad"

DUPLEX METALS COMPANY

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30 Church St.

INTERESTING NOTES ON CONDENSERS

In the early days of telephony, Condensers were invariably built up from solid tin foil and waxed paper. Such Condensers are, however, apt to break down and become crossed or short-circuited, especially under modern conditions.

A grit in the foil or a pin-hole in the paper is sufficient to cause a breakdown, and the defect can seldom be made good because the two foils become welded together by the current passing through the fault. Occasionally the weld can be burnt out by a strong current, but this generally damages the Condenser seriously, because the solid foil is of appreciable thickness and requires a heavy current to fuse it.

The minimum thickness of foil commercially usable is determined partly by the high cost of rolling the metal, and partly by the difficulty of handling extremely thin foil. Consequently, the foil commercially used is much thicker than is called for by the electrical conditions.

The ideal conditions of an extremely light and thin film of metal, combined with considerable mechanical strength, seem therefore to be impossible of attainment; but, nevertheless, the apparently impossible actually has been attained, and as the result, the manufacture of Condensers is being revolutionized.

The solution of the problem was found by the English telephone engineer, G. F. Mansbridge, who conceived the idea of employing for Condenser work a specially prepared metallized paper, i. e., a paper upon which is deposited an extremely thin film of pure tin, forming an even and continuous conducting layer in absolute contact with, and inseparable from, the paper.

In this combination, the paper provides the necessary mechanical strength, and the thin film of tin the conducting electrode. The thickness of this film is such that, whereas there is ample conductivity for all telephonic currents, there is so little mechanical strength **in the film alone** that it instantaneously shrivels up if subjected to currents greatly in excess of its normal carrying capacity.

This property of shriveling up under excessive current is of great value, since a Condenser made from such material (known generally as a **MANSBRIDGE CONDENSER**) is rendered absolutely proof against breakdown from internal crossing or short-circuiting. If an internal short-circuit be accidentally or purposely produced, the Condenser at once begins to discharge itself across the point of short-circuit and the momentary current concentrated at this point is strong enough to shrivel up the conducting film **immediately surrounding** the point.

By this **localized** shriveling up, the film isolates itself from the point of breakdown, and the insulation of the Condenser is preserved, since the heat developed by the transient current is insufficient to scorch the paper.

This automatic sealing of the breakdown point may be repeated thousands of times, and still the Condenser will retain its capacity and its insulation.

So instantaneous is the sealing that, if a pin be driven into an insulated charged **MANSBRIDGE CONDENSER** so as to cause a short-circuit between the electrodes, the rush of current to the puncture will seal up the defect before the Condenser has had time to do more than partly discharge itself. A dozen or more such punctures may be made before the Condenser becomes discharged.

Just as a **MANSBRIDGE CONDENSER** seals up when punctured by a pin, so does it seal up, automatically and instantaneously, when the puncture is due to a lightning discharge or other high tension current; and it is because of this remarkable and permanent immunity from breakdown that the Condenser was named by its users the **MANSBRIDGE DREADNOUGHT CONDENSER.**

Besides possessing this valuable and unique property of automatic sealing, **MANSBRIDGE CONDENSERS** are cheaper, smaller and lighter than those made from solid foil; and they consequently are forcing their way to the front and becoming **the accepted standard everywhere.**

They have been adopted exclusively by **the English government Telegraph and Telephone Administrations; and they are made under license by Western Electric Company, L. M. Ericsson Co., Electric Specialty Co., Stromberg-Carlson Co., American Electric Telephone Co., and by numerous other licensees all over the world.**

Insist upon having MANSBRIDGE CONDENSERS and save money in first cost, and also in maintenance.

For further particulars and for terms of manufacturing license in U. S. A. and Canada apply:

G. F. MANSBRIDGE, Mount House, New Barnet, England

THE INSPECTOR AND TROUBLEMAN.

(*Continued from page* 651.)

through trees above station No. 3. Yet in spite of all this, stations No. 1 and No. 3 were able to ring each other, and by shouting and repeating somewhat, were able to do business over the line.

"This result was more astonishing as the batteries were in bad condition and the receivers had lost most of their magnetism and were therefore very inefficient. The instruments were equipped with 1,000-ohm ringers and 500-ohm induction coils.

"Some of our friends who have seen lines completely knocked out by apparently less trouble than in this case may consider this an exaggeration, but let us take all the factors into account. In the first place, there had been many heavy rains, and the water in the stream and swamps was therefore fresh and soft. As there is no lime or other hardening ingredients in the soil, the water remains soft and quite pure all the year around, it being much used for drinking purposes, tasting much like rain water, which it really is.

"Now water of this kind possesses a much higher resistance than is generally supposed. It is quite fair to suppose that the ground resistances were 1,000 ohms each, making 500 ohms for the two. The resistance of the cross was higher still. But let us suppose that the resistance of the line was as low as 400 ohms. In the talking circuit we would have:

Line resistance	300 ohms
Two induction coils	1,000 ohms
Two receivers	150 ohms
Total	1,450 ohms

"Thus we have a divided circuit to earth of 400 ohms on one side and 1,450 on the other, a proportion of about 3.5 to 1, and judging by the volume of sound, that was just about the amount of current passed. It must not be forgotten, also, that an almost infinitesimal amount of current will work a telephone receiver."

(*To be continued.*)

Wisconsin's Comment on Interstate Accounting Plan

A Memorandum Submitted by the Railroad Commission of Wisconsin to the Interstate Commerce Commission Bearing Upon the Proposed System of Uniform Accounting for Telephone Companies Which that Body is Preparing—Final Installment

Standard classifications of accounts in this country, to which citation has already been made (p. 12) are uniform in their treatment of rent as an operating expense.

It has been suggested that the procedure proposed is based upon the economist's concept of rent and that since the accounts of operating costs are designed to reflect what the economist defines as expense of production, rent does not enter as an operating expense.

William Morse Cole: Accounting Methods for Determining Costs and Prices. (Bulletin of the American Economic Association, April, 1911.)—"Many accountants say that rent is a profit, not a cost. This seems to me a perversion of the economic doctrine that rent does not add to the cost of production. Laying aside refinements of economic theory and taking things in the rough, the natural cost of an article is the cost at the margin of production—the cost at which it just pays. If rent is paid, however, a countervailing advantage must somewhere exist else the work should not be done. Then the costs exclusive of rent are below the margin, or standard. To fix prices at that point is to transfer the benefit of the advantage to the customer and sell goods at a point so low that it cannot persist.

The accounts, in other words, have led to a false conclusion with regard to normal cost. The rent, which merely measures the amount by which the particular articles are produced below the margin, is in this case an element in the measure of standard cost, and so should be included in the cost calculations. If the manufacturers are owners of the real estate, rent to them is an income not as manufacturers but as real estate owners. If they pay rent to others, rent is to them a clear cost and should be reported." (p. 135.) See also Cole: "Accounts, Their Construction and Interpretation," foot note p. 225.

It is to be emphasized that the economist's usual definition of rent relates only to the rent of land, and a distinction is usually made between this term and rentals or quasi-rents or payments for the services of appliances of production. It is generally conceded that the payment for the use of the operating plant is a part of the cost or expense of production to the entrepreneur. The same distinction has been made by accountants. Thus A. Lowes Dickinson, in his discussion of "The Economic Aspect of Cost Accounts" at the St. Louis meeting of the American Economic Association, qualifies his statements in conclusion to refer to rents of "land and buildings."

"In the case of manufacturing companies no such clear recognition of this principle is found, and rent for factories, etc., where paid, is always treated as an item of manufacturing cost or expense, while interest, an exactly similar item, is more usually treated as a charge against or division of profits. This method of charging rent as an expense has led to a claim that it is properly so treated, and that, therefore, when a manufacturer owns his premises and pays no rent, an estimated amount corresponding to the value of the use should be charged into and considered as part of the cost thereof. This sounds plausible but it is believed that a nearer approach to theoretical accuracy is to be found in the railroad practice of considering all rentals, at least when there is a natural division between rent and other service, as a charge against or division of profits." (p. 119.)

"The more I consider the subject the more I incline to the conclusion that in practice at any rate . . . interest and rent (so far as the latter represents a payment for the use of land and buildings and not any charge for other services) could only be considered as a division of profits, and that the adoption of any other principle must lead to injustice and error." (p. 152.)

It need not be pointed out that the fixed capital in the telephone plant devoted to land or even buildings is small and need not affect our conclusions.

It is of interest to note, moreover, that while economists themselves differ as to whether rent, i. e., rent of land, enters into price, it is generally conceded that such rent is a part of the cost or expense of production as affecting the individual producer.

Marshall:—Principles of Economics. (4th Ed.)—"Reverting to a caution given at the beginning of this chapter against misunderstanding the general bearing of Ricardo's doctrine, we may notice that this argument does not imply that a manufacturer when making up the profit and loss account of his business would not count his rent among his expenses. If the ground-rent in, say Leeds, rises, a manufacturer finding his expenses of production increased may move to another town or into the country; and leave the land on which he used to work to be built over with shops and warehouses, for which a town situation is more valuable than it is for factories. For he may think that the

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saving in ground-rent that he will make by moving into the country, together with other advantages of the change, will more than counterbalace its disadvantages. In a discussion as to whether it was worth while to do so, the ground-rent of his factory would be reckoned among the expenses of production of his cloth." (Vol. I, p. 486.)

Clark, J. B.:—Distribution of Wealth.—"The rent of any agent comes into existence in the hands of the enterpreneur, and it consists in the goods that the agent produces. The selling of the goods puts the rent into the form of money, but it is still in the entrepreneur's possession. When he pays this rent to the owner of the productive agent, rent becomes to the entrepreneur a cost. In a static state, all the entrepreneur's costs consist in such rent claims made on him by laborers and capitalists. As rents created in the shop are products, and as rents received by owners of productive agents are incomes, so rents paid by entrepreneurs are costs. All rents are, at the proper stage of their existence, thus paid by entrepreneurs; and at this stage rents and costs are synonymous." (Ch. 23, p. 369.)

Johnson, A. S.:—Rent in Modern Economic Theory.—"The relation of rent to entrepreneurs' cost need not be discussed at length, since it is not disputed by any important modern economist that to the individual entrepreneur rent is an outlay similar to wages and interest. The farmer who is unable to pay the prevailing rate of rent for the land he uses is as surely driven out of business as one who cannot pay the ordinary rate of wages or of interest. Social customs may, indeed, treat wages and interest as preferred shares in distribution; but this is not necessarily true, nor is it normally the case in our present society. The rent is fixed before the productive process begins: if any loss occurs, it falls upon interest, or even upon capital." (Pub. American Econ. Ass'n, 3rd Series, Vol. III, No. 4, p. 93.)

See also following treaties of the later economists: Ely, Outlines of Economics, Revised Edition, p. 419, 435; Saeger, Introduction to Economics, 3d Edition pp. 162, 164, 218; Palgrave, Dictionary of Political Economy, Vol. 1, p. 438, Vol. III, 284; Marshall, On Rent, Economic Jour., Vol. III, p. 85; Fetter, The Passing of the Old Rent Concept, Quarterly Journal of Economics, Vol. 15, p. 448.

Several additional reasons suggest themselves why rents accrued should be considered as part of operating costs and included as operating expenses.

A distinction is usually made in the income statement between those receipts and expenditures which relate to the public utility undertaking and those receipts and expenditures which have no reference to production, but are part of the transactions of the corporation. If such a distinction is to be maintained, it seems clear that all rents are not incurred as part of the corporate transactions of the undertaking, but are rather occasioned by the fact that production must be carried on in certain localities where the company is unable, even should it so desire, to own the equipment upon which it transacts business. The rent of pole and roof contacts and the lease of licensed equipment in the telephone business are examples in point. Such expenditures are frequently necessitated in an operating utility because of its nature as a business of public calling obligated to furnish service wherever applied for, and are not the result of an optional financial policy of the corporation to lease instead of own its plant and equipment.

In the classification of accounts submitted rents incurred in the process of construction are made a portion of the fixed capital, and in our opinion properly so (274). There seems, however, to be no better reason why rent should be considered a part of the capital costs than that it should be considered a part of the operating costs. In the former instance the investor in the competing market will include rents incident to construction in his valuation of the plant. Similarly, in a choice between two localities rents necessarily incurred in operation will be considered in his estimates of margin of net revenue.

As regards the objection to the inclusion of rent in operating expenses upon the ground that such a procedure will not place companies with rented equipment and companies with owned equipment upon an identical basis, it is submitted that the purpose of comparison of the expenses of separate companies is to disclose such differences.

Variation in size, location, scope of operation, management, financial policy and similar factors are all reflected in the operating expenditures, and from a statistical standpoint the desirability of obviating a single cause of difference does not seem practicable. This is especially true since the payment incurred for the service of equipment is so closely akin to the payment incurred for a finished product entering into the cost of production. For example, if payments are made for current purchased which is later retailed by an electric utility company to users, such payments would concededly be part of the operating cost.

There seems no reason why a distinction should be made between such a form of payment and that exacted for the use of a generating plant leased by the operating company. In both cases the other operating costs of the electric utility are increased somewhat proportionately to the amount of current handled, irrespective of whether that current has been generated by equipment owned by the operating company, leased by the operating company or has been generated by an outside agency and purchased by the operating company.

Generally speaking, it is not always feasible to segregate financial from operating transactions. Material may be purchased for cash or upon an extended credit basis, and yet it would not prove desirable to separate the payment for the use of money from the payment for the use of material. We conceive it to be the purpose of the "operating expense" statement to reflect such differences, so that comparison with other plants will point out in what portion of the business abnormal costs are to be found.

It seems evident that many of these reasons cannot have been the controlling motive in placing rent expenditures as a deduction from income. What, then, has been the purpose in separately segregating charges for rent from charges for other operating costs? It cannot have been for the purpose of clearing inter-company transactions in a combined statistical summary, since in most instances the lessor is not another telephone company and since a large number of rents receivable have been included in operating revenues and not as direct additions to income. It cannot have been because of the nature of the rent item, since in both theory and practice rents have been construed as part of the cost of production.

If the attempt is being made to segregate financial transactions from operating transactions, the classification is not consistent and the result obtained are of doubtful value from the standpoint of statistical analysis and are disabling to a commission interested in determining all factors affecting reasonable rates.

V. Maintenance.

The operating accounts grouped under the primary account "maintenance" it is estimated will aggregate 53.8 per cent. of the total cost of operation. The total of maintenance consists of charges for repairs, charges for subscriber station removals, and charges for depreciation. Repairs are defined as follows:

Repairs, as used in the text of the various operating expense accounts, includes ordinary and extraordinary repairs.

Ordinary repairs include:

(a) The pay of labor engaged in and expenses of testing for, locating, and clearing crosses, breaks, grounds, and other line troubles, including routine work intended to prevent such troubles, as, for example, pulling up slack, tightening guys and resetting guy stubs, trimming trees, straightening poles and cross-arms and cleaning and adjusting apparatus;

(b) The replacements of minor or shortlived parts of structures, equipment, or facilities;

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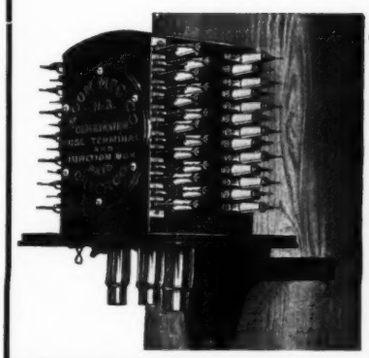

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(c) The replacements of minor parts of wire plant or equipment made necessary by reason of faulty adjustments, excessive strains, mechanical injuries, or other minor casualties, not provided for in the charge for depreciation of plant and equipment;

(d) The cost of recovering salvage and removing retired or abandoned property, except subscribers' station equipment, when such costs are not provided for in the depreciation reserves;

(e) Rearrangements and changes in location of plant, except subscribers' station equipment (for which a special account is provided). This includes rearrangements of circuits, reassociation of party lines, rearranging grouping of trunks and calling circuits, recross connecting on distributing frames, rerunning jumper wires, underlining switchboard jacks, etc., together with materials used for such purposes which do not add to the tangible value of such plant.

Ordinary repairs are not required to be taken into account in fixing a rate of depreciation. (21.)

It is suggested that the above definition includes rearrangements and resetting of equipment and routine tests as repairs, and that such an inclusion is at variance with general practice and will obscure the information necessary in determining whether upkeep of the property has been properly made. The same objection is made to merging of station removals and changes in the class C classification under the single account "maintenance."

Class C companies, moreover, will merge the maintenance expenses with depreciation charges. It seems clear that expenditures representing an *estimate* of the loss incurred for depreciation, injuries and damages, insurance against contingencies, etc., should, for purposes of annual report, be segregated from expenditures *actually incurred* for the regular operation of the plant during the year. It is urged, therefore, that the deduction for depreciation be separately allotted as an additional operating expense item.

Many companies are in position to estimate the depreciation allowance properly set aside each year upon each portion of the tangible property, and in theory such an allowance should be included under the term "maintenance." The experience, however, of such states as Wisconsin, where the depreciation reserve is compulsory, has demonstrated that the opinion as to the amount of depreciation added to total operating cost is subject to such variations as to make necessary a separate reporting at the end of the year.

The maintenance expenditures in telephone operation are a somewhat larger portion of total operating cost than similar expenditures in other undertakings. Largely because it is possible to postpone upkeep and thus neglect the property, *investors have insisted that the definition of what is maintenance and what operation be strictly construed.* This caution should be emphasized in a uniform classification for telephone utilities since such a large portion of the telephone plant is short lived.

It is urged that the rearrangement of property quasi-movable in nature, such as lamps, lamp posts, meters, transformer circuits, telephones, etc., has no reference to *upkeep* of property and in generally accepted classification of accounts are included as *operation* and not *maintenance.*

See classification of revenues and expenses for outside operations as described by the Interstate Commerce Commission for steam roads, July 1, 1908. In electric light and power plant production expenses, and distinct from maintenance, there is included, page 103, "Changing the location of lamp posts, fixtures, cutouts on series incandescent lamps, etc., cost of setting (when chargeable to expenses) removing, and resetting arc lamps in commercial or municipal service * * * changing the location of poles, lamp posts, mast-arms, hangers, and ropes * * * the removal of appliances from place to place. making of reconnections, etc."

Likewise, under gas producing plants, distribution expenses, we note, "Disconnecting, reconnecting, and changing the location of appliances."

In the uniform classification of accounts for electric utilities, Public Service Commission, Second District, New York, 1908. Under distribution expenses and distinct from maintenance, we note: "E 533, setting and removing meters and transformers."

Standard classification of accounts, National Electric Light Association, 1910, page 77, under distribution-operation and distinct from maintenances, we note "setting and removing meters and transformers."

Uniform classification of accounts, telephone utilities, Railroad Commission of Wisconsin, May, 1909, under wire plant operation and distinct from maintenance, "Superintending, inspecting and testing of aerial and underground plant and the patrolling of lines"—under substation operation as distinct from maintenance—"The testing of substation equipment at the subscribers' premises and work of troublemen except maintenance work * * * the labor expense of removing, changing, and reinstalling, except when the expense thereof is charged to the subscribers and of changing substation batteries."

Uniform classification of accounts, electric utilities, Railroad Commission of Wisconsin, April, 1909, under distribution-operation as distinct from maintenance. "Removing and resetting transformers, removing and resetting meters—inspecting and testing meters."

Classification of accounts, American Light & Traction Co., 1907, under distribution department expenses and distinct from maintenance—"Setting and removing arc lamps, setting and removing transformers."

Classification of expenses, Doherty Operating Co., under alternating distribution. "Setting and removing meters."

Standard system of accounts, Stone & Webster, electric utilities, in cost of distribution, operating, as distinct from maintenance. "Installing, removing or exchanging of arc lamps —installing, removing, replacing or exchanging meters."

In fact, the effort to restrict the definition of maintenance and to construe it strictly has resulted in classing many repairs and replacements of short lived apparatus as operation. Thus, in the classifications already cited, such items as replacement of short lived tools, storage battery maintenance, replacement of incandescent lamps, etc., are classed as *operation* and not *maintenance.*

Associations of accounting officers have laid stress upon including *major* replacements in maintenance rather than in depreciation and capital accounts, thus emphasizing the necessity of a *conservative policy in recording upkeep.*

Report of the Special Committee Upon Definition of Terms "Maintenance," "Improvements," and "Additions." *Twentieth Report of the Association of American Railway Accounting Officers, New York City, 1905:* "In the opinion of the committee, and in accordance with the declaration already set forth, the following items are properly chargeable to operating expenses under the general heads "maintenance of way and structures" and "maintenance of equipment":

To maintenance of way and structures: Sloping cuts and widening embankment; ballast; block and other systems of road or track signals, including interlocking apparatus, signals and other safety appliances; snow sheds and snow fences; cost of filling bridges and trestles with earthwork; rails, fastenings and other track material laid in track, regardless of weight of metal removed; ties replaced, regardless of class, kind or number per mile; replacement of bridges and culverts; all fences, road crossings, signs and cattle guards; replacement of all buildings, including cost of additional buildings necessary to operations of property; replacement of docks and wharves; additional telegraph and telephone lines necessary for operation of property. This does not include construction of telegraph and telephone lines for commercial business.

To maintenance of equipment: Replacement of locomotives, passenger, freight and work cars and marine equipment, regardless of original cost, weight, power or capacity of equipment replaced; additional work equipment necessary to maintain property up to the general standard of efficiency; replacement of shop machinery and tools, including additional machinery and tools, necessary to maintain equipment up to the general standard of efficiency. (pp. 109-113.)

Report of Sub-Committee on "What Constitutes Maintenance?" *American Electric Railway Association Proceedings, 1911, Accountants' Association:* "In order to ascertain what action, if any, has been taken with regard to this subject by the various public service commissions, a circular letter was sent to all such bodies and replies were received from twenty-nine. Twenty-two of these have made no ruling

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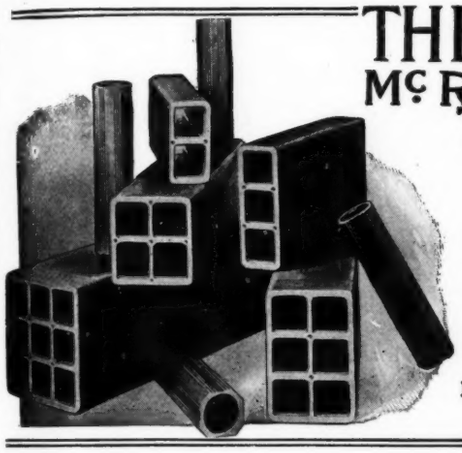

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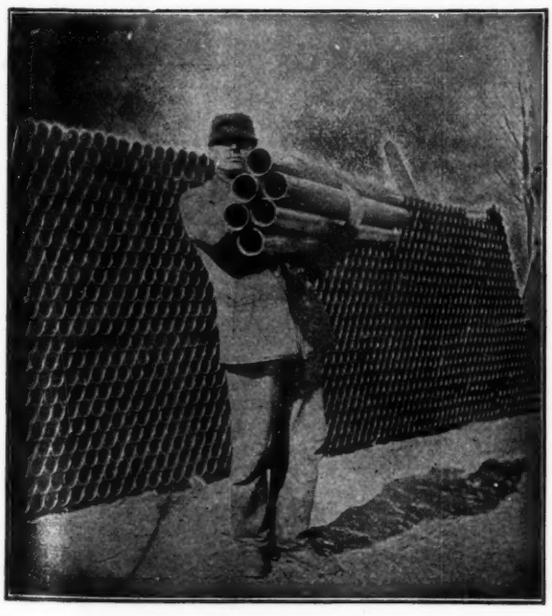

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on the subject and have not made any attempt to define in any way what constitutes maintenance, other than the fact that they have adopted the general schedule of accounts as promulgated by the Interstate Commerce Commission. Seven, however, have in one form or other attempted to frame a definition, and it would appear from a study of these rulings that in most cases 'maintenance' is a comprehensive term including everything that is chargeable to repairs or upkeep, and also includes renewals or replacements, whether in part or in toto.

One of the commissions requires that renewals when made in toto shall be charged against a 'depreciation reserve,' created by charges for 'depreciation' under the head of 'maintenance' in 'operating expenses.' Some stipulate that renewals when in excess of the value of the thing renewed shall be charged to capital account so far as the excess value is concerned. The Chicago Board of Supervisory Engineers has attempted to draw a complete distinction between repairs and renewals by adopting a unit for every part of the equipment or plant, and when a unit is replaced it is charged to a renewal reserve fund accumulated in accordance with the provisions of the traction ordinances under which the companies are operating. These ordinances define 'renewals' as 'the replacement of any principal part of said street railways or their equipment or appurtenances.' When less than a unit is required it is treated as a repair and is included under maintenance."

"In conclusion, your sub-committee is of the opinion that a definition of maintenance that does not include replacements in a system of accounts is incomplete unless the system provides for charging of replacements to a 'depreciation reserve' account created by charges to depreciation under operating expenses, in which case the term should include such depreciation; and that when the cost of a replacement by reason of increased capacity exceeds the original cost of the thing for which it is substituted that part of the cost in excess of such original cost should not be included in maintenance." pp. 119-122.

REPORT OF CHAIRMAN ACCOUNTING COMMITTEE. *American Water Works Association 1911. Maintenance Expenses:*—"Maintenance expenses include the costs of service and material incident to the repair of the property of water works and the losses due to depreciation and amortization of these properties.

Expenses for repairs are the costs of those mechanical and physical changes in the fixed properties and equipment constituting parts of the fixed assets of an enterprise, which are called repairs. These repairs are changes which primarily affect the results of current operation rather than the value of the properties or equipment. They are changes made for the purpose of keeping the properties in as good working order as they were originally expected to be after the lapse of time which intervenes between the date of acquisition or construction and that of repairs. The term 'repairs' should not, therefore, be applied to any mechanical or physical changes which result in new structures or equipment as makes them in all respects as valuable and serviceable as, or of greater capacity than they were at the time of original construction or acquisition. All cost for the changes last referred to should be recorded in assets accounts, for which see later instructions." p. 21.

REPORT OF THE COMMITTEE ON STANDARD SCHEDULES FOR UNIFORM REPORTS UPON MUNICIPAL INDUSTRIES AND PUBLIC SERVICE CORPORATIONS. *Journal of Accountancy, May, 1909. Repairs and renewals distinguished.* Repairs and renewals are general designations for all mechanical changes effected in buildings and other structures, or in machinery and other equipment, which have as their object the keeping of such buildings, structures, machinery, and equipment in a condition suitable for use or the restoring of the same to a sound condition after decay, waste, or partial destruction; and for the substitution of new buildings, structures, machinery, and equipment for old ones which have become worn out or obsolete. Repairs are changes which have as their primary aim the maintenance of buildings, structures, machinery and equipment in as good and serviceable condition as at the time of their acquisition or construction, they were expected to be at the specified time of repairs; while renewals and changes which have as their primary aim the restoration of the buildings, structures, machinery, and equipment to a state or condition as good as, or better than, that existing at the time when the displaced property was acquired or constructed. p. 50.

Definitions of maintenance and repairs usually refer specifically to *physical changes in equipment* and not to *changes in location.*

ADDRESS DELIVERED BY DR. LE GRAND POWERS, CHIEF STATISTICIAN, BUREAU OF THE CENSUS, before the Association of American Government Accountants, March 12, 1908. *Government Accountant, Vol. II:* "The repairs of an enterprise are the physical changes made in its more or less permanent structures and equipment for the purpose of keeping them in a condition suitable for use and in a state as good as, at the time of their construction, acquisition, or installation, they were expected to be at the expiration of the period which had elapsed at the time of repairing."

"The renewals of an enterprise are the physical changes made in its more or less permanent structure and equipment which have as their object the restoration of the same to as good or better state than they were at the time of their acquisition, construction or installation." p. 11.

NEW YORK PUBLIC SERVICE COMMISSION, SECOND DISTRICT, UNIFORM CLASSIFICATION OF ACCOUNTS FOR ELECTRICAL CORPORATIONS, JANUARY 1, 1909:—*Repairs Defined.* "When through wear and tear or through casualty it becomes necessary to replace some part of any structure, facility, or unit of equipment, and the extent of such replacement does not amount to a substantial change of identity in such structure, facility, or unit of equipment, the replacement of such part is to be considered a repair, and the cost of such repair is to be treated as an operating expense, and must not be charged as a replacement in any capital account." (p. 38.)

RAILROAD COMMISSION OF WISCONSIN. UNIFORM CLASSIFICATION OF ACCOUNTS FOR ELECTRIC UTILITIES. April, 1909.—"Maintenance should be understood to mean 'upkeep' and should cover all expenditures for current or ordinary repairs, renewals or replacements of property resulting through wear and tear, or through those casualties which are incidental to the nature of the operation and for which expenditures are necessary in order to keep up the productive capacity of the plant to its original or equivalent state of efficiency.

When, however, a complete replacement of any building or structure, facility or unit of equipment is made necessary regardless of such current expenditures, the uncurrent or extraordinary repairs, renewals or replacements made necessary will be charged to the department reserve accumulated for that purpose." p. 17.

Exceptions have been made to this general rule in the inclusion of such items as cleaning and sanding track and removal of snow and ice in the electric railway classification. Reference has already been made to the explanations offered by Mr. Balch, of the Interstate Commerce Commission, that maintenance was designed to include expenses incurred in the preparation for traffic. Such a position, while evidently satisfactory to certain companies, can scarcely be said to be in line with good public policy.

"I might have stated a little more clearly than I did that, as a general principle you want credit in your maintenance account for every dollar that you have spent in maintenance. The public always views with approval the maintenance of a property at a high standard of efficiency, and any account that you can properly put into the maintenance will, I believe, reflect credit on you rather than provoke criticism of your judgment in so doing. That is a personal conviction only." (American Street and Interurban Railway Association proceedings, 1907. Vol. II, p. 156.)

As has been pointed out, such a definition of maintenance has little to recommend it and it is noteworthy that it has provoked the criticism of operating men and accountants. W. F. Ham, chairman of the committee on standard classifications of accounts, A. S. & I. Ry. Assoc. 1907 proceedings, has stated:

"Now, then, if to put oil on your bearings is to maintain it in the sense of repairing or renewing it, then to grease a curve is to repair and maintain your track. They are exactly the same thing, and it seems to me that this discussion is simply an outgrowth of previous practice. It used to be treated as maintenance and is still being so treated, but I cannot for the life of me see why going out and sprinkling the track to keep

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J-M TRANSITE EBONY ASBESTOS WOOD

J-M Transite Ebony Asbestos Wood was put through a series of exhaustive tests in the Underwriters' Laboratories, the results of which are shown below, and was *approved* for switchboard panels and many other electrical uses.

Break-Down Test

Break-down voltage of J-M Transite Ebony Asbestos Wood for ½" thickness was 25,000 volts.

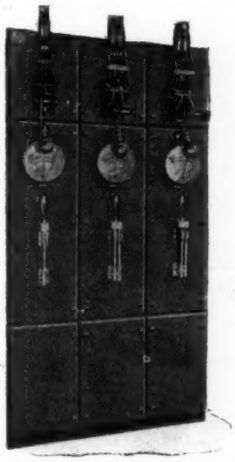
Insulation tests were made on samples 9/16" thick placed between electrodes of 9.6 sq. ins. (atmospheric temperature)—"*dry*"—gave 45,000 megohms. After 24 hours' immersion in water insulation resistance was 42,000 megohms.

Moisture Absorption Test

This test showed that J-M Transite Ebony Asbestos Wood was practically unaffected by immersion in water up to 216 hours.

Combustibility Test

Combustibility tests showed no effect under flame except that the surface became slightly calcined.



Strength Test

Tests for mechanical strength and ease of working with tools showed the following:

**Tensile strength* per sq. in., 3500 lbs.

**Breaking strength* 1 in. sq. section on 12-in. centers, 325 lbs. Has twice the breaking strength of marble, slate or soapstone.

**Crushing strength* per sq. in., 12,500 lbs.

**Transverse strength* per sq. in., 3000 lbs.

**These results form a different series of tests.*

Tests for ease of working with tools showed that samples bored for 8/32" screws took thread well and behaved in similar manner to hard rubber. Can be sawed and planed like wood.

The above tests show conclusively that J-M Transite Ebony Asbestos Wood is the ideal "*approved*" material for switchboard work.

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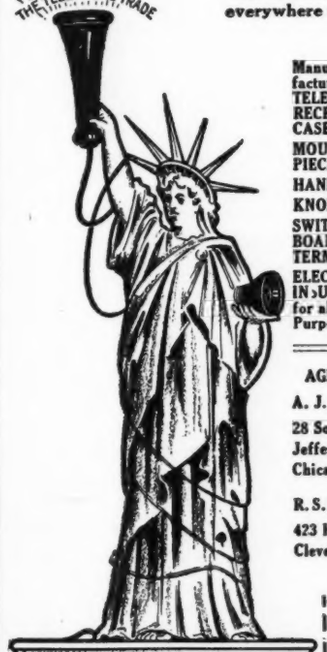

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the dust down, a city track I am speaking of, or to grease a curve or anything of that kind, is maintaining property." p. 175.

William Hubbard Lawton, C. P. A. (Penna.) states the following in regard to the classification of electric railways:

"There are many points of detail that call for more or less criticism, but the limits of this article confine us to a brief mention of a few of the most striking. Under the general account of maintenance of way and structure the classification provides primary accounts for cleaning and sanding track and removal of snow, ice and sand. Clearly these should be placed under general account 'conducting transportation.' The work embraced in them is purely to facilitate the movement of cars, not to preserve the track. One might as well insist that lubricants for power machinery and cars should be considered maintenance." (Journal of Accountancy. Vol. VI, p. 119.)

When a separation is made of operating expenses under the grouping suggested, viz., central office, transmission, and subscribers' station, it appears that both maintenance and operating costs are occasioned in each of the successive steps of furnishing service. Under the proposed classification there is no distribution system operation or subscribers' station operation, since all labor and material occasioned outside of the exchange are grouped as maintenance. Returns under the Wisconsin classification indicate that the amounts thus erroneously included are a substantial part of distribution and subscriber station costs and it is urged that in the classification of operating expenses for Class A and B companies such a distinction between what is operation and what maintenance should be preserved.

VI. Accounting Procedure.

The accounting procedure involved in obtaining a classification of operating expenses similar to that suggested herein will prove as simple as the procedure involved in providing information under the tentative accounting series circular No. 30.

A classification of accounts almost identical with that provided in the tentative circular has been promulgated by the Public Service Commission of New York, Second District. In an effort to assist the smaller telephone companies to so arrange their bookkeeping procedure as to furnish required reports at a minimum of labor and expense, there was issued by the Railroad Commission of Wisconsin on February 11, 1911, accounting circular No. 2, this circular being prepared on behalf of the Wisconsin State Telephone Association by William A. Frame, C. A., C. P. A., of J. Gordon Steele & Co., Minneapolis, Minn., chartered accounts of Minneapolis, Minn., and consulting accountants to the state telephone association.

Both texts present suggested forms and procedure, designed to serve the company with little experience in keeping books according to double entry methods.

A careful comparison of the procedure provided in the pamphlet of the New York commission and that provided in the pamphlet of the Wisconsin commission does not disclose wherein a system of operating accounts grouped according to the successive processes of furnishing service will differ from the procedure involved in grouping along the traditional lines of maintenance, traffic, and general expenses.

Referring to the records of original entry, we note that a daily time report is necessary under both systems of accounting and that the forms provided are entirely similar. Both provide for the recapitulation of the time at stated intervals, for the division of time upon an hour basis, and for the charge to the respective accounts of the proportionate amount of payroll indicated in the summary. Both systems also make similar provisions for a store room account and provide for the credit to such an account of materials used and the charge to proper operating accounts.

In providing for the record of operating revenues, it is noted that both texts provide similar subscribers' ledgers upon which each consumer is charged according to the class of service received. Similar closing entries are provided at the end of each month by which the total of accounts receivable are credited to the separate general ledger accounts.

The only differences noted relate to the handling of vouchers and the procedure provided in the journal and cash book. It is not necessary to describe in detail just wherein these differences exist, since, with similar records of original entry provided, the general accounting procedure described in the New York pamphlet can be applied to the entries provided in the Wisconsin pamphlet, and vice versa.

In an effort to secure a classification of accounts for telephone companies which will prove of greatest service to the work of the commission and to the utility company, the Railroad Commission of Wisconsin has exercised supervision in some detail as to the accounting methods employed in securing the information prescribed. The separate companies have been free to designate their own accounting procedure since the actual mechanics of the bookkeeping are dependent largely upon the local conditions surrounding each particular plant. It has been necessary, however, to make definite suggestions to the separate companies and at times to assist in the installation of books of accounts.

The classification of accounts provided in accounting circular No. 30 have been carefully reviewed, particularly with regard to the accounting procedure involved, and it may be safely concluded that the changes herein suggested in the classification will not impose additional burdens upon the reporting company. These facts are emphasized since it is realized that no criticism is entitled to more weight than the assertion that the information called for is not practicable from the bookkeeper's standpoint.

Conclusion.

For the reasons elaborated, we regret to state that the classification for telephone companies proposed in accounting series circular No. 30 is not suited to the needs of a state commission in its work of supervision of local and intrastate telephone operations. The changes suggested, however, are not impossible amendments to the text of accounts as it is submitted at the present time. Such amendments are, we believe, in keeping with sound accounting principles and designed to supply information as to cost of service and efficiency of operation. Unless such changes are made, it will be necessary for the Railroad Commission of Wisconsin and, we believe, for other state commissions, to require additional and conflicting reports from telephone companies within their jurisdiction.

New Paris Telephone Exchange.

It is now four years since the central, or Gutenberg, telephone exchange at Paris was entirely destroyed by fire, says the Scientific American, and after that a temporary exchange was installed while waiting for the reconstruction of the building. At present the new exchange is erected and the apparatus is commencing to be installed. The new building is a handsome one, and is built on the site of the old one, next the central post office, but the somewhat narrow space due to the position of the ground is made larger by adding an overhang in reinforced concrete, so that the main halls on the different floors are no less than 210 by 36 feet.

Nothing in its equipment has been overlooked which will contribute to good hygiene and safety, and the walls are now covered with white enamel, using diffused ceiling lights and dust aspirators. On the fifth floor are the apparatus for the multiple boards, which occupy each side of the long hall and are designed for 10,000 city subscribers, also the interurban boards.

A second exchange board of like capacity is to be installed on the fourth floor. The present exchange serves only the central district of the town, and there are a number of other exchanges in various parts of the city. It is expected that the new exchange will be in full operation during the early part of next year.

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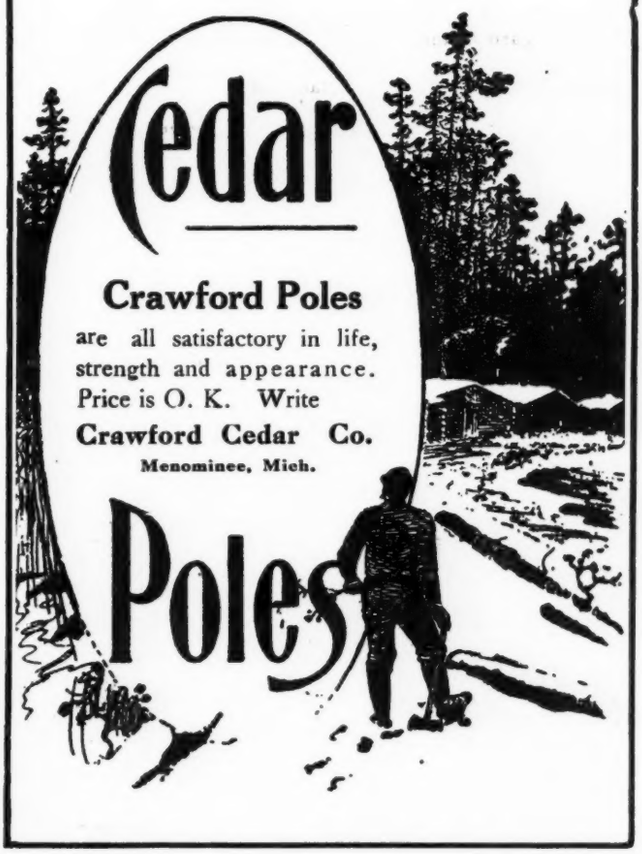

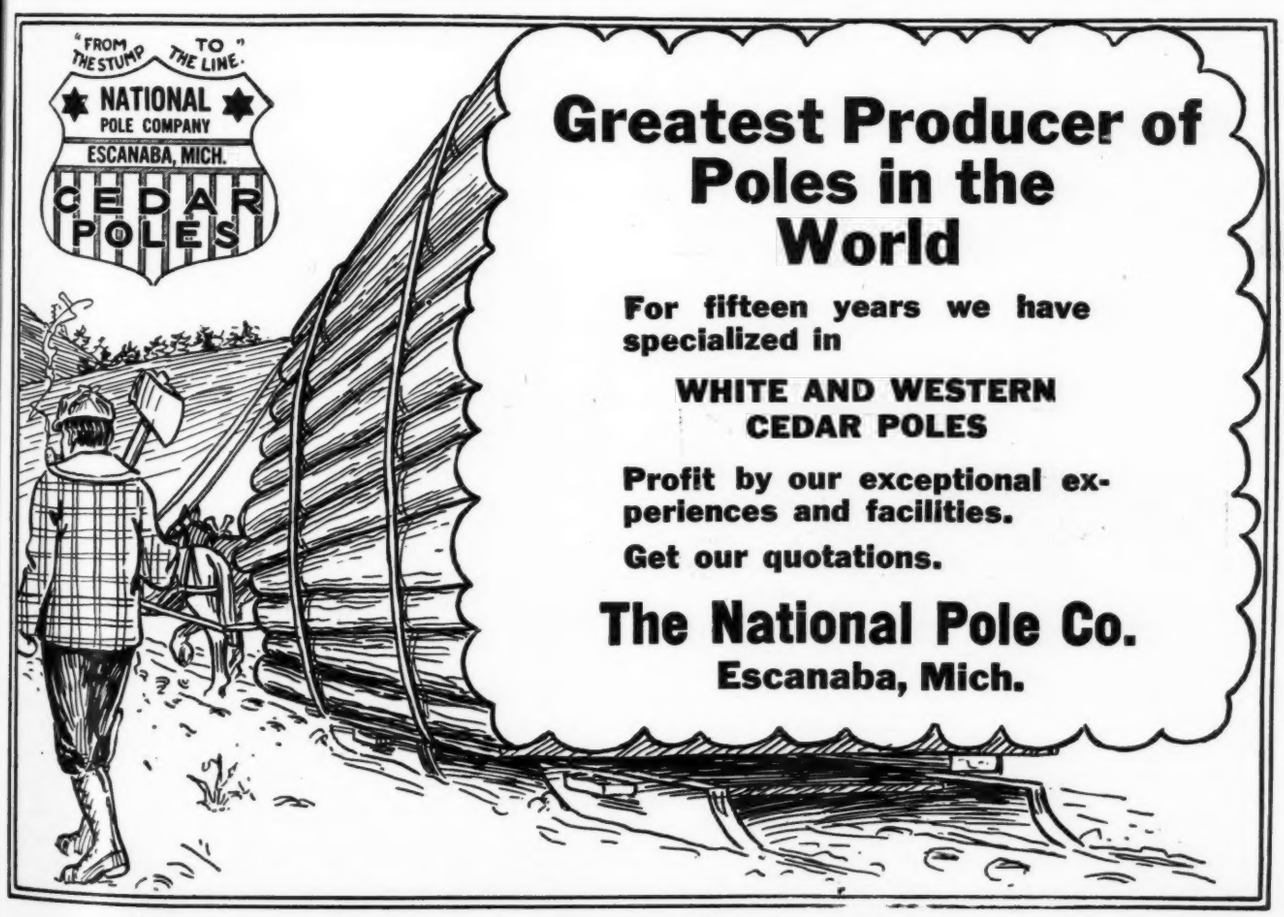

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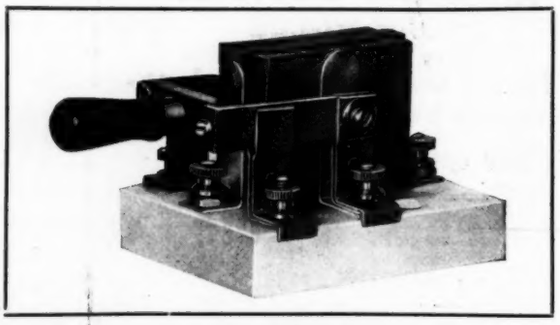
Progress Made by Reliable Electric Co.

Sometimes it is interesting to follow the career of a company, especially when it has made rapid strides during a brief interval

Factory of the Reliable Electric Co.

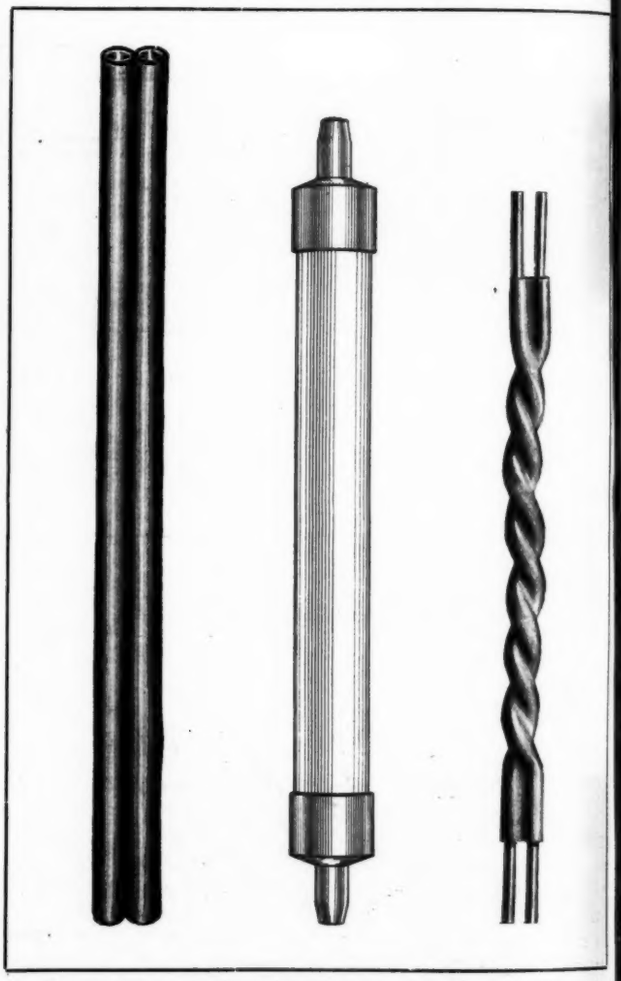
of time. On December 6th, 1909, the Reliable Electric Co. was incorporated under the laws of Illinois, and commenced operations in Chicago. The men principally responsible for the creation



No. 406 Arrester.

of this company were F. W. McMeal, G. W. Rodormer and O. C. Junge.

F. W. McMeal, president of the company, had been for over twelve years general superintendent of the American Electric Fuse Co., of Muskegon, Mich. While with this company, he improved many of its specialties. He always had a keen and observing eye and the faculty of being able to comprehend immediately the utility of any telephone device brought to his attention. In this way, he was able to add to the number of protective devices made by the company. Mr. McMeal is a firm believer in the principles of scientific management and the latest and best equipped machinery may be found in his present factory. Hence, manufacturing costs are said to be materially reduced because of a greater production obtained. This brings about the natural result of lower prices to the user. At the time of severing his relations with the American Electric Fuse Co. Mr. McMeal had 450 people under his supervision, and many



1. Copper Sleeve—2. Porcelain Fuse—3. Double Tube Connector After Twisting.

of these joined his force with the organization of his own company. They have been big factors in promoting the rapid growth and success experienced by this company during the past three years. Mr. McMeal never allowed the smaller, though necessary, details of the business to entirely engross him to the exclusion of bigger things, and this may be the real reason why he conceived the idea of a company of his own.

G. W. Rodormer, secretary and sales manager, was for a number of years in charge of sales for the American Electric Fuse Co. His duties necessitated a constant campaigning in the telephone field, where he had to contend with much competition and where he formed hosts of good friends and customers. Mr. Rodormer is an aggressive type of salesman, untiring and always maintaining an air of enthusiasm which he unconsciously imparts to others. He makes a good impression everywhere and

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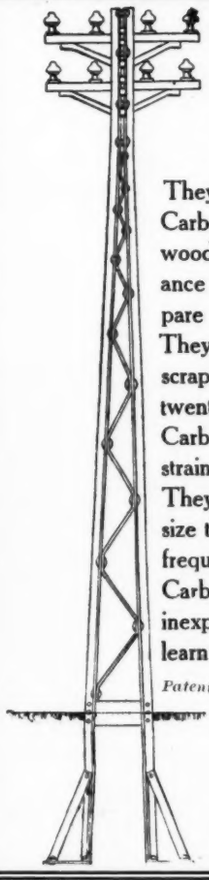

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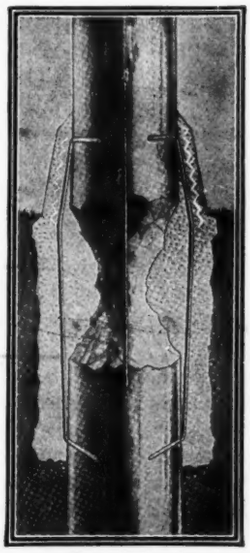

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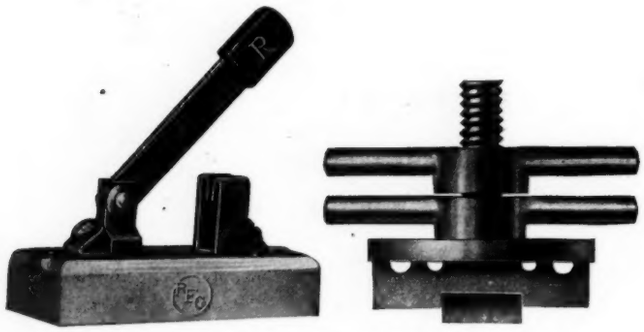
is known as "George" to a great many telephone men. He never ceases to praise and talk the merits of Reliable specialties.

O. C. Junge is the youngest member of the company. He, too, is an indefatigable worker, has innumerable good ideas, knows how to execute them and is an electrical engineer and designer. He just recently developed the Reliable horse clipper, which has a big field among the electrical jobbers and hardware dealers. Mr. Junge is constantly on the lookout for new ideas

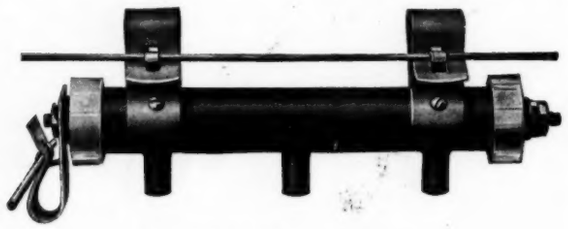


No. 450 Baby Knife Switch—No. 000 Test Connector.

which can be developed by his company. He gives this feature of the company's business special attention and advises that he is continually on the alert for meritorious inventions which, through lack of capital and time frequently prevent the inventors from manufacturing.

This is the caliber of men comprising the Reliable Electric Co., and who made its success a certainty. The company's first order was received from the Sandwich Electric Co., Sandwich, Ill. The factory site and space first obtained were thought to be ample, but soon proved to be the contrary. It was realized at the end of six months that more space was necessary. Additional floor space was procured, but this likewise proved to be inadequate.

At present the company occupies commodious quarters in a modern factory, 411-417 S. Sangamon street, Chicago, and is



No. 700 Lightning Arresters.

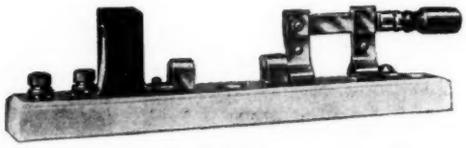
in position to handle a big volume of business. The number of specialties made by the company has been increased considerably, and the line now embraces fuse strips, wire and links, glass fuses, fuse blocks, pencil fuses, steel and copper sleeves, cable hangers, porcelain fuses, cable terminals, baby knife switches, distributing frames, cable joints, test connectors, heat coils, etc., etc.

Several of the company's leading specialties are here shown. In conjunction with the factory an experimental laboratory is maintained for the development and improvement of new ideas. Before any Reliable product is shipped, it is carefully tested as a precaution and a guarantee of future good service for the ultimate user. The company's business has so increased in volume that it is now filling orders received from all parts of the world. Some of the largest telephone companies are included among its patrons. Mr. Junge says, "It is especially gratifying that our repeat orders contribute to form the biggest portion of our business."

A catalog, containing some thirty pages, presenting all of the company's important specialties, which is printed on an enameled stock (perpetual in form, as pages may be taken out and inserted at any time), and which is substantially bound, will be mailed gratis, to any telephone company desiring a copy.

Important Development in Coffey Accounting System.

A feature of the Coffey system of accounting, put out by the Coffey System & Audit Co., of Indianapolis, Ind., which has not until recently become possible, will be ready for use within two weeks. This is the publication by the company of a complete set of instructions for the installation of the system, which will enable its adoption and use by telephone companies which do not feel warranted in assuming the expense of a personal audit and installation by Mr. Coffey or his accountants. These instructions and the books and forms as well, will be in complete accord with the uniform accounting system which is to be applied to telephone companies by the Interstate Commerce Commission on and after January 1, 1913.



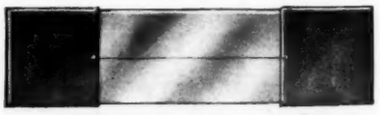
No. 500 Cut-out.

Under this plan the Coffey system may be purchased and readily put into commission even by companies which do not employ expert bookkeepers. The instructions are prepared in the simplest possible manner, so that any one of average intelligence may adapt the system to his particular needs and still keep within the requirements of the Interstate Commerce Commission. This will bring the Coffey system within the reach of the most modest purse. Full details will be gladly given upon application to the company, at Indianapolis.

Reliable Cable Hangers.

J. W. Coffey, head of the company, has just completed an installation of the system for the Logansport Home Telephone Co., of Logansport, Ind. This is rightly regarded as a gratifying contract for the Coffey system, as Walter J. Uhl, general manager of the Logansport Home, which has an extensive property, carefully canvassed the various accounting plans offered before selecting that of the Coffey company.

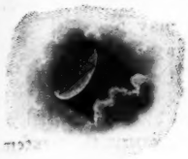
Mr. Coffey also recently installed his system for the Ligonier Telephone Co.. of Ligonier, Ind. He expects to proceed in a few days to Creston, Iowa, there to accomplish the same end, as well as to effect a complete audit of the books of the Creston Mutual Telephone Co. Other contracts are pending, which will shortly be announced.



Reliable Enclosed Mica Fuse.

Fire Insurance Exchange Prosperous.

On "fire prevention day" the Telephone Fire Insurance Exchange, of Cleveland, Ohio, sent to a large number of the telephone companies of the United States a reminder to have their equipment inspected and equipped with Pyrene Fire Extinguishers and then fully insured by this organization.



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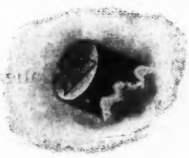

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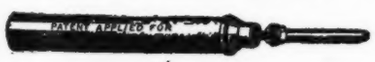
Main Office: "Electric" Bldg., Denver, Colo.

POT END HEAD



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Bonding Clamps
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Good Luck
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Large Stocks—Prompt Shipments
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Why run the risk and cost of delay when you can get both quality poles and quick service from us?

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Guaranteed to give satisfaction.
Get our prices before you buy.
THE AMPVO BATTERY CO.
1607 Michigan Ave. CHICAGO, ILL.

Please tell the Advertiser you saw his Announcement in TELEPHONY.

The exchange commenced writing policies on January 3, 1910, and has shown a substantial saving on all business written from that date to this. J. B. Hoge, manager, states that the exchange has paid all losses in full on every risk, while some of the other insurance companies have not as yet settled on one loss. It has already effected a substantial saving to the telephone companies in addition to the returns made in the shape of dividends. He also says that a number of telephone companies are carrying all their insurance through their membership in this organization, while others are placing very substantial lines. One of the big interests has just advised that the results so far have been so satisfactory that it will give the exchange all it can carry from this time on.

It is urged that this organization, with its high endorsement by the National Independent Telephone Association, and backed by its record in paying losses and its substantial saving to its members, should offer convincing inducements to every telephone company to place at least a portion of its business with the exchange.

A Born Telephone Advertising Man.

TELEPHONY recently sought information concerning Edward I. Pratt, advertising manager for the Kellogg Switchboard & Supply Co., of Chicago, in order to present his biography upon the page weekly devoted to "Men Prominent in the Telephone Field." We received the information and we also received the following interesting account of Mr. Pratt's career, as penned by himself. We propose, therefore, to let Mr. Pratt tell his story in his own way first. Later we will print our cold, dispassionate biographical review. Mr. Pratt's version is this:

Edward I. Pratt.

"Telephonically speaking, I was born behind a switchboard. The first sounds I remember were the drone of voices, the clicking of plugs and the nearby quiet rustle of the cords as they slid up and down. A sober-faced man, who most always carried nippers and for whom I frequently held a soldering iron and pulled down lamps, is first in my memory. He was called the night man, but his work seemed never to end. In early childhood I learned cord repairing from another sober-faced man, around whom there was always the smell of hot flux and stale tobacco.

"My first glimpse of telephone trouble was through the good offices of Kleinstuber and Burns, names now well known in Milwaukee telephone and municipal work. Burns would have made a fine city editor, for at the trouble desk we didn't often ask questions a second time. Kleinstuber was a complaint checking specialist and his patent trouble board used to tell the story better than directors' reports. Happy days! Then my ambition was to carry a grip and 'shoot.' Chasing 'receiver-offs' was a beginner's job and that lead to inspecting.

"But cleaning up a beery telephone in a third rate saloon was nothing compared to chasing complaints in the German-American section where stocky Teutons, when they couldn't G. C. or the complaint department (Main 44) in any other way, would take the axe to the antediluvian piece of talking machinery on their walls.

"Then there were gentle Weirich, and Gray, who handled 'L. D.' Weirich is another manager of an Independent exchange now, and so is Green, who, with Staff, kept the big board clear. I'll never forget Staff. Tall and slender, always quiet, sincere and always on the job—that last is certain evidence of the real telephone man.

"T. J. Holmes was manager at 445 Broadway in those halcyon times, another 'old Bell man,' and he, among other things, used to head off the kicks that got by Main 44. He was a thoroughly practical telephone man.

"Then there was Smith, engineer; Kennedy; Frank, the troubleman; and Joe, a real Irish lineman not afraid to tackle anything, from a disconnect on Milwaukee's 'Fifth Avenue,' to fancy pole work in the face of a Cream City January blizzard. Where all the old crowd have gone is hard to tell, but most of them, it's interesting to know, are now in Independent fields.

"The possibilities of telephony attracted this cub trouble chaser (that was 12 years ago), so that, to acquaint others of these opportunities, advertising seemed the best vehicle, as the press agents say, and naturally advertising the best telephones in the world was the best way. So I am here.

"And so, telephonically speaking, may I die—provided Kellogg apparatus is as good as it is now and always has been."

Paragraphs.

CHARLES S. REDDING, sales representative of the Leeds & Northrup Co., of Philadelphia, was in TELEPHONY's offices this week. Mr. Redding is just completing an extensive business trip through the Southwest.

THE NORTH ELECTRIC CO. has leased fine offices in the Monadnock Block, Chicago, to which it will remove from Cleveland on November 15. Full particulars will be presented later.

BROWN & WILLIAMS, 1550 Monadnock Block, Chicago., announce that the practice of patent and trademark law heretofore conducted by them will be continued by the new firm of Brown, Williams, Bell, Hanson & Boettcher. ALBERT C. BELL, HARVEY L. HANSON AND ARTHUR H. BOETTCHER, the new partners, have for years been actively associated with the firm of Brown & Williams. MR. BELL is a graduate of Cornell University in electrical and mechanical engineering and was for several years in charge of the patent department of the Stromberg-Carlson Telephone Mfg. Co. MR. HANSON has had a varied experience in the more general practice of law, in addition to his many year's association with Mr. Brown in patent and trademark matters. MR. BOETTCHER, since finishing his training in the engineering department of the University of Wisconsin, has devoted himself exclusively to the practice of patent and trademark law.

Strong for the Automatic in Dallas.

The Dallas Automatic Telephone Co., of Dallas, Texas, is printing in the theatre programs of that city a letter received from one of its subscribers, who is enthusiastic over the new service. The letter follows:

"Two weeks ago we had installed in our office and residence an automatic telephone. Our experience with it has been a delight to us. No wrong numbers, no nerve-raking wait for the hello-girl to repeat our correct number, when in a hurry; no interruption on the line; answers to our calls are instanter; when we hear the 'buzz' we know the line is busy—we do not take any chance; we are positive—and thus save time. We have put the automatic to the severest test; we called wrong numbers; we called the correct number with a wrong letter preceding; we then called complaint department and were advised of our mistake. All this we did on purpose to test the efficiency of the automatic. We even called our own number and were greeted with the familiar 'buzz' of line is busy.

This is not a paid article, it is written as a recognition of the prompt and correct service given us and incidentally, as an apology to the Dallas Automatic Telephone Co., for our former skepticism as to the efficiency of its service. We will henceforth use the automatic to the exclusion of others."

EACH ONE OF THE TWO HUNDRED TYPES
of
BROOKFIELD
INSULATORS

is the best insulator of its kind. YOU—or anybody—can buy.

That is why they are used for HIGH and LOW voltage line construction—EVERYWHERE.

Brookfield Glass Company
2 Rector Street
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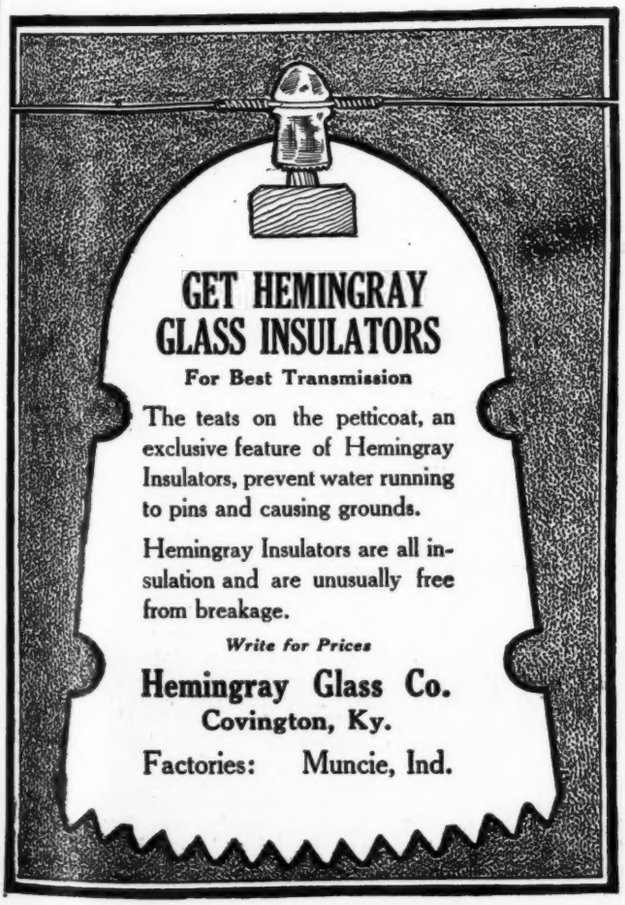
We shall be pleased to receive your request for our new catalogue



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For Best Transmission

The teats on the petticoat, an exclusive feature of Hemingray Insulators, prevent water running to pins and causing grounds.

Hemingray Insulators are all insulation and are unusually free from breakage.

Write for Prices

Hemingray Glass Co.
Covington, Ky.

Factories: Muncie, Ind.

1-2-3-4
applied to batteries

Every 1900 Dry Battery is tested four times.

These are the instructions of Mr. Phillip Nungesser. His battery has a reputation for giving the most satisfactory service, as well as the longest—and he would not sacrifice this reputation in the factory. For twenty years he has been raising the standard of the 1900. That standard is about as high now as it is possible to be developed in a dry battery. It is this standard which is paying telephone companies bigger dividends every year—a standard which makes for very high efficiency and econony. Every statement made in behalf of a 1900 dry battery we are fully prepared to stand back of. We would like to quote on your next year's requirements. Let us tell you a few of the reasons why 1900 batteries excel.

THE NUNGESSER CARBON & BATTERY CO.
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TRADE MARK REGISTERED
1900

Ask for batteries with this trade mark

Legal Cases and Decisions

By A. H. McMillan

Right to Operate in New Jersey.

A telephone line was installed and in operation for some years in New Jersey. Consent was then obtained from a person occupying abutting property, who was believed to be the owner. Some disagreement arose between the telephone company and the true owner. The telephone company resorted to its right of eminent domain to determine the compensation to be paid to the abutting owner for the right to put the telephone poles in the road and to trim trees incidentally for the operation of the telephone line.

One ground of defense on the part of the abutting owner was that the company had undertaken to operate under various acts, which related in their title to telegraph companies (C. S. 1910, page 5312 seq.), and supplemental acts bringing in telegraph companies as well. It was claimed that those acts which conferred rights on telephone companies were unconstitutional because they were supplements to the telegraph company act and that telegraph companies were not included in the titles of those acts. On this point the court held that telephone companies had often been held to be included in telegraph acts, though not specifically named therein and that consequently the law was constitutional.

It was also held in the case that a telephone or telegraph company in building its line along the public highway might do such reasonable trimming of the branches of trees as is reasonably essential to the proper operation of its line, without unnecessarily interfering with or destroying trees or parts thereof. Wray vs. Mott, 83 Atlantic, 866.

Stringing Wires Over Highway.

An electric company in New Jersey strung wires over lands belonging to a property owner, but located within the lines of a public highway. The poles from which the wires were suspended were not located on the lands of the property owner, but on the lands of adjoining owners and by their consent. The township committee had granted the electric company the right to erect poles and string wires on the highway in question but this permission was given for the purpose of aiding the electric company in carrying out a contract for public lighting within the borough. The land owner sought to restrain the string of the wires over the land in the highway of which he had the fee.

The court held that at common law and in the absence of local statutory restrictions, an owner might restrain the stringing of wires over lands within the highway of which he owned the fee. The statutes of the state (1896, page 322) gave full power to electric light companies, so far as township highways were concerned, "to use the public highways for the purpose of erecting posts or poles on the same to sustain the necessary wires and fixtures, upon first obtaining the consent in writing of the owners of the soil."

The court held that this statute required the consent of the owners of the soil over which the wires were suspended, as well as of the owners of the soil in which the poles were located. In spite of this ruling a temporary injunction was denied, as the court did not wish to finally decide the matter at the final hearing. Blanchard vs. Eastern Pennsylvania Power Co., 83 Atlantic, 505.

Failure to Guy Corner Pole.

A corner pole was not guyed. Near at hand a lineman was working on another pole. The corner pole broke and fell and this allowed the pole on which the lineman was working to fall and injure the man.

Under this state of facts, the supreme court of Washington held that the lineman was not negligent in ascending the pole in reliance upon the promise of his foreman to properly guy the poles although he did not inspect the former pole. The telephone company was held to have assumed the risk of injury. Murphy vs. Pacific Telephone & Telegraph Co., 124 Pacific, 114.

Remedy of Abutting Owners in Connecticut.

Acts done within the limits of a highway in Connecticut may work an actionable injury to the property rights of an abutting owner, either by virtue of his ownership of the fee or his ownership and possession of the abutting property. In the first class the acts, when they imposed an unauthorized additional servitude on the land covered by the highway, constitute a trespass for which the property owner may have his damages. In the latter case the acts constitute a nuisance, the maintenance of which may be enjoined by the property owner. So holds the Supreme Court of Errors of Connecticut in the case of Cadwell vs. Connecticut Co., 83 Atlantic, 215.

High and Low Voltage Wires on Same Pole.

A lineman in the employ of an electric company was injured by coming in contact with a high voltage, either directly or through a broken telephone wire that he was directed to remove from a transformer. The electric company maintained low and high voltage wires on the same poles. The question of whether the electric company maintained the wires in a defective condition, so that high voltage wires would come in contact with the low voltage wires was held to be for the jury.

The diligence and care required of the electric company was held to be commensurate with the danger the employment of electricity necessarily creates. A judgment against the electric company was sustained. Birmingham Railway, Light & Power Co. vs. Canfield, 59 Southern, 216.

Right of County Attorney to Telephone.

The county attorney of Washita county, Oklahoma, had a telephone in his office. The county commissioners did not provide it or authorize him to provide it, but paid, when presented, all long distance tolls necessary in the conduct of the business of the county attorney. The attorney transacted his private law business in the same office, but the telephone was largely used for public business.

The attorney paid the telephone rent himself and presented claim to the county commissioners for the amount. The sheriff was the only other county officer who had a telephone in his office. The county commissioners disallowed the claim and suit was brought by the attorney against the county. The supreme court of the state held that a judgment for the attorney was erroneous. Board of Commissioners of Washita County vs. Brett, 124 Pacific, 57.

Telephone Talk in Evidence.

Where in the course of a business transaction, one party calls up another by telephone, recognizes and identifies his voice, and discusses with him some phase of the business they have together, it is for the jury to determine if the conversation is denied, whether or not it took place and of what it consisted.

The reason for this rule was stated to be "the commercial use of the telephone and its general trustworthiness as tested by average experience." Murphy-Hardy Lumber Co. vs. Roder, 83 Atlantic, 769.

Loss of Teeth from Sagging Wire.

An omnibus driver lost his teeth from coming in contact with a sagging wire while seated on the top of his bus, driving at a moderate rate along the middle of the street. The city ordinance required wires to be at least 16 feet above the level of the street. A judgment of $900 was recovered against the company for the loss of the driver's teeth and a portion of his jaw bone.

The verdict was upheld by the court on the ground that the telephone company is bound to use ordinary care and reasonable diligence to place and keep its wires in a safe condition where they extend over and along the public road. Greater care and diligence were required where the wires are over a principal street of a city than if over a highway in some sparsely settled country district. Thompson vs. Reed, 135 Northwestern, 679.

Disused Wire in Coal Bin.

A house, provided with the usual facilities for electric lighting, became vacant. The new tenant did not desire that kind of lighting, so the electric current was cut off by disconnecting at the fuse box on the inside cellar wall about five feet from the floor. About three feet of the wire was allowed to hang from the fuse box with the broken end imbedded in a pile of coal on the cellar floor. The coal pile gradually diminished as the coal was used.

The tenant while shoveling coal into a bucket was injured by a shock, from his shovel touching the broken wire. The court decided against the injured man because it did not appear that the condition had existed long enough to

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DOOR OPERATION:—One of the distinctive advantages of the "Folding Door" is that it can be both closed and opened by pulling on the handle. This feature, which is an important one from the booth user's standpoint, is possible only with this type of door.

THE "FRENCH" FOLDING DOOR means
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Write for booklet describing the advantages of the "Folding Door" Booth

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charge the company with constructive notice. This judgment was reversed on the ground that the breaking of the wire must have occurred at the time the coal was put in, and hence long enough to have given the company constructive notice. Bernstein vs. Philadelphia Electric Co., 83 Atlantic, 612.

Danger from Dangling Wire.

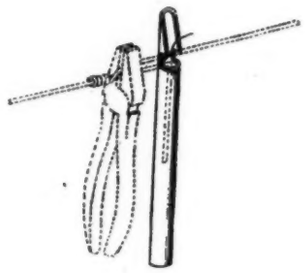
A girl, eighteen years old, was killed by contact with a telephone wire charged with electricity. The wire had been disconnected at the service end which was firmly attached to a telephone pole. During a severe wind and rain storm this fell and the wire fell across the service wires of the electric company, which it crossed at right angles. The loose end dangled down across the gateway entering the premises of the girl's home. This happened about ten o'clock at night.

About seven o'clock the next morning, the girl went through the gate and pushed the wire aside without harm. On returning a few moments later, she again caught the wire, which was too low for her to pass under freely, and then received the fatal shock. The case was held one to be only for a jury and a judgment for the administrator of the deceased girl was affirmed. Decatur Light, Power & Fuel Co. vs. Newson, 59 Southern, 615.

Record of Telephone Patents Recently Issued

1,039,104, September 24, 1912. WIRE SPLICING TOOL; H. L. Crowmer, Indianapolis, Ind. Consists of a piece of tubing having a transverse slot at one end. An end of the wire is bent at right angles and placed in the hollow stem which is then twisted around the other wire.

1,039,156, September 24, 1912. PLUG SWITCH; J. J. Lyng; assigned to Western Electric Co. A twin plug for connecting



No. 1,039,104.

the operator's set with the switchboard is described. The plugs are separated by a spring and enclosed in a shell.

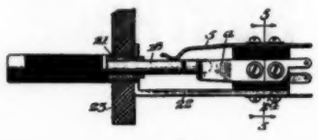
1,039,443, September 24, 1912. TRANSMITTER; J. K. Rhodes, Brooklyn, N. Y.; assigned to K. M. Turner, Jamaica, N. Y. Designed with adjustable resistances about part of case and intended for use of deaf persons.

1,039,656, September 24, 1912. CORDLESS JACK BOX; E. E. Dildine and J. A. Rugh, St. Paul, Minn.; assigned to Sandwich Electric Co., Sandwich, Ill. Has a plurality of jacks upon which the telephone lines and exchange telephone set terminate. The insertion of a plug connects the set to the line.

1,039,667, September 24, 1912. EMERGENCY SIGNALING DEVICE; I. D. Fellows, Syracuse, N. Y.; assigned one-half to J. H. McCartney. Describes means for producing a howling sound at the subscriber's station when the receiver remains off the hook for some time.

1,039,773, October 1, 1912. TELEPHONE SWITCHBOARD; E. S. McLarn, East Orange, N. J.; assigned to Western Electric Co. A private branch exchange switchboard consisting of superposed sections so that its capacity may be increased easily.

1,040,389, October 8, 1912. ELECTRIC SIGNALING DEVICE; R. C. Nevin, Berkeley, Cal. A desk telephone has an automatic calling device comprising a circuit-making and breaking piston in the standard, controlled by raising a finger plate.



No. 1,039,656.

1,040,428, October 8, 1912. DEVICE FOR AIDING THE HEARING; E. W. Schneider, New York; assigned to the Mears Ear Phone Co. Describes a transmitter mounted upon the end of a dry cell.

1,040,523, October 8, 1912. COIN COLLECTOR; A. F. Dixon, New York; assigned to Western Electric Co. Covers an electromagnetically controlled toll mechanism for pay stations.

1,040,629, 1,040,630, October 8, 1912. TELEPHONE SYSTEM; E. R. Corwin, Chicago; assigned to Corwin Telephone Mfg. Co. Describes relay arrangement for automatically controlling the ringing circuit and for disconnecting the operator's set when the connection is completed.

1,040,631, October 8, 1912. BUSY TEST; E. R. Corwin, Chicago; assigned to Corwin Telephone Mfg. Co. An automatic and rapid busy test received through the cord circuit.

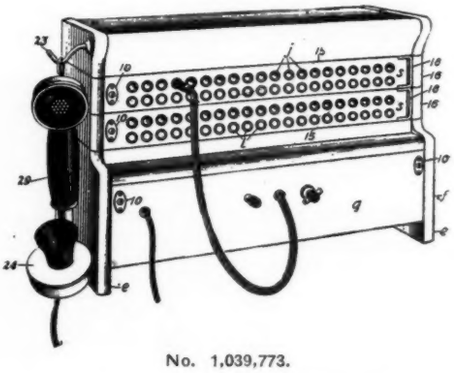
1,040,632, 1,040,633, October 8, 1912. TELEPHONE SYSTEM; E. R. Corwin, Chicago; assigned to Corwin Telephone Mfg. Co. In the first named patent a motor mechanism for sending intermittent ringing current over the line is described. The second patent covers a method of connecting a common battery to lines in active service.

1,040,635, 1,040,636, October 8, 1912. TELEPHONY; C. A. Bals, Chicago; assigned to Corwin Telephone Mfg. Co. An automatic selecting calling device located in the base of a desk stand is described. The other patent relates to a method for the interconnections of two stations on the same line.

1,040,637, October 8, 1912. TRANSMITTER; R. Royal, Chicago; assigned to Corwin Telephone Mfg. Co. Includes a stationary cup having a flexible closure upon which one of the terminals is mounted, thus being movable.

1,040,796, October 8, 1912. RECEIVER HOLDER; Sidney C. Sladden, New York. Covers a mechanism which holds the receiver in position at the ear when telephone is being used.

1,041,030, October 15, 1912. COIN COLLECTOR; Edward B. Craft and Amos F. Dixon, Chicago; assigned to Western Electric Co. Describes a coin collector for toll or local telephone



No. 1,039,773.

calls. A coin in passing through the chute operates a contact which notifies the operator of the deposition of the coin. The operator can refund the coin when necessary.

1,041,233, October 15, 1912. EARTH ANCHOR; Jasper Blackburn, Kirkwood, Mo. Consists of a disk shaped crown which carries a plurality of plates arranged to slide upon each other. A shank is fastened to the crown and by means of a member loosely attached to the shank, the plates may be laterally expanded.

1,041,464, October 15, 1912. BATTERY CONNECTOR; James M. Hall, Sulphur Springs, Tex. Relates to method of connecting dry cells in series. A rod is rotatably mounted above the cells and provided with fingers which connect with the like poles while wires connect the other poles to the fingers.

1,041,536, October 15, 1912. CALL RECORDER; Harold L. Warwick, Fort Worth, Tex. Describes mechanism located at a multiple switchboard for recording the calls made from a telephone instrument.

1,041,545, October 15, 1912. SECONDARY TRANSMITTER MOUTHPIECE; Albert Worcester, New York. This is made of a single piece of glass. It has a body surrounding the ordinary mouthpiece and head of transmitter with an extension projecting into other mouthpiece.

Samuel G. McMeen

McMeen & Miller

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ENGINEERS **EXPERTS**

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6 Models—500 to 4,000 lbs. Capacity. All Styles of Bodies

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Used by leading companies including Bell Telephone Co., Postal Telegraph-Cable Co., and New England Telephone & Telegraph Co. Let us know your needs.

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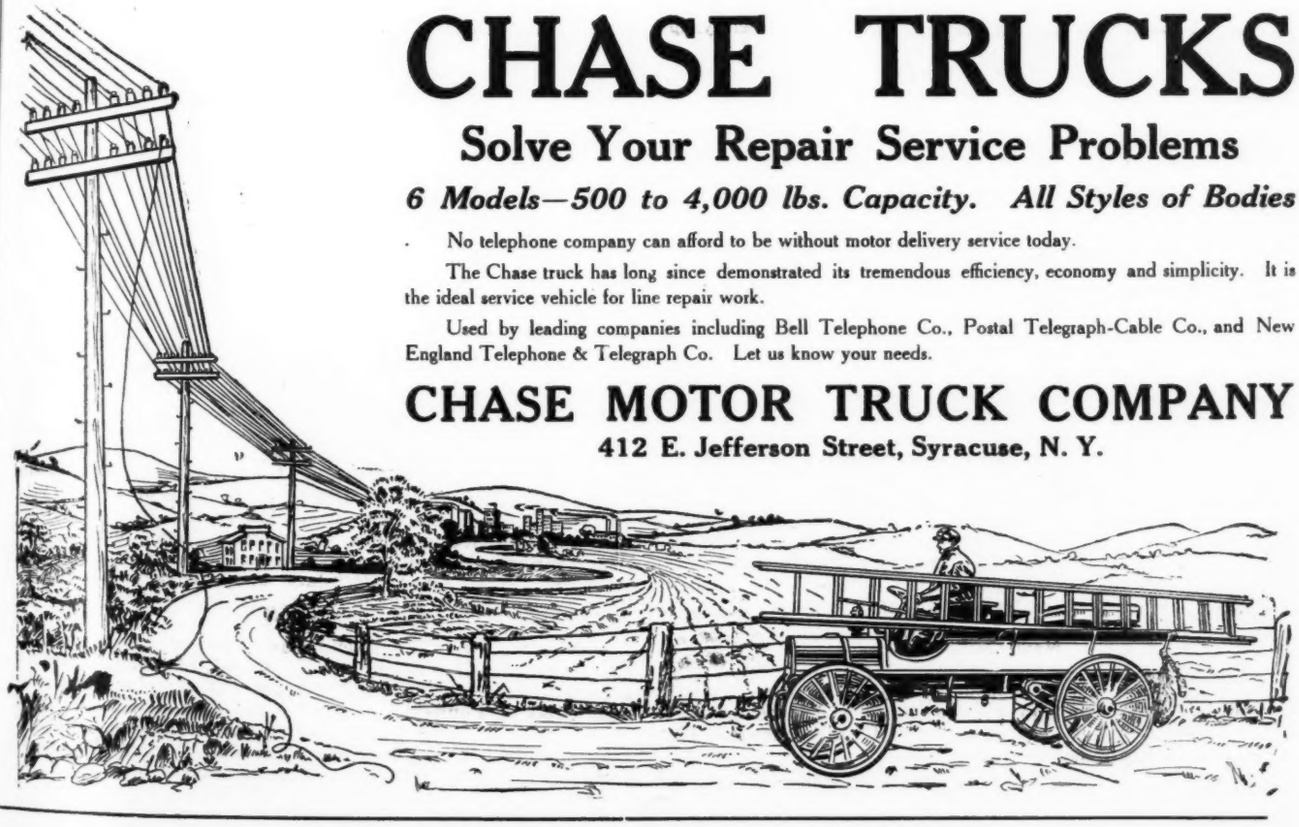

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Condensed News Reports

Officers of Companies are Earnestly Requested to Forward Us Promptly All Financial and Other Statements as Soon as Issued, and Any Items of Interest as to Their Plants and Systems

Personal.

E. E. DERR, of Milledgeville, Ill., has been appointed superintendent of the Savanna Mutual Telephone Co., Savanna, Ill.

GUY AMBERSON, who has been located at Exeter, Neb., as manager of the Lincoln Telephone Co., has been promoted to a like position at Hastings, Neb.

HARRY C. FOLLETT, agent for the New York Telephone Co., at Avon, N. Y., has been appointed local manager for the Genessee county territory, with headquarters at Le Roy.

E. E. BAWSEL, special agent for the general commercial superintendent of the Southern Bell Telephone & Telegraph Co., at Atlanta, Ga., has been appointed superintendent of the Georgia division, to succeed W. B. Roberts.

S. R. PAYNE has been appointed assistant general manager for the central district of the New York Telephone Co., with headquarters at Rochester, and T. W. Evans has been appointed general superintendent of the western district.

F. W. LANE, of Aberdeen, S. D., for the past seven years auditor for the Dakota Central Telephone Co., has resigned to accept a position with the city of Aberdeen as deputy auditor and assessor. Mr. Anderson, of the Dakota Farmer, has been appointed his successor.

JASPER N. KELLAR has resigned as president of the New England Telephone Co., Boston, Mass., after twenty-seven years of service. He has been succeeded by Philip L. Spalding, now second vice-president of the Bell Telephone Co. of Pennsylvania. E. K. Hall has been elected vice-president and John Balch assistant treasurer.

GERALD DEAKIN, formerly chief engineer of the Bay Cities Home Telephone Co., and recently automatic plant engineer of the Pacific Telephone & Telegraph Co., has left for New York on his way to Europe to take up the development of automatic telephone apparatus for the Bell Telephone Manufacturing Co., of Antwerp. Mr. and Mrs. Deakin expect to reside in Europe for the next three to five years.

MISS ESSIE ZIETLOW, daughter of J. L. W. Zietlow, president of the Dakota Central Telephone Co., Aberdeen, S. D., was married October 16, at Aberdeen, to R. L. Hamilton, of Baker, Mont. Miss Zietlow is well known to telephone people throughout her state. When but ten years of age, she frequently operated the Aberdeen switchboard in the absence of her mother, who was in charge, while Mr. Zietlow was engaged in outside telephone construction. From this early beginning Miss Zietlow continued in operating work and gained the reputation of being the best telephone operator in the state. During the past five years she has not been active in operating, but her name became familiar to the employes of the Dakota Central company through the appearance of her signature upon all their pay checks.

W. W. RYDER, who recently assumed the newly-created position of manager of the railway department of the Western Union Telegraph Co., with headquarters in New York, is well-known to the telegraph fraternity as one of the leading members of the Association of Railway Telegraph Superintendents. At the time of his acceptance of this new position he was general superintendent of telegraph of the New York Central Lines west of Buffalo, with headquarters at Chicago.

Mr. Ryder entered the service of the Chicago, Burlington & Quincy Railroad in 1883, and in 1887 became stenographer in Chicago for Frank A. Vanderlip, now president of the National City Bank, of New York. The same year he returned to the Burlington system first as stenographer, and finally, in 1893, becoming superintendent of telegraph for that road.

He held this position until January 1, 1910, when he was appointed general superintendent of telegraph for the New York Central Lines west of Buffalo, which position he has just resigned to join the Western Union staff, at New York.

New Companies.

FAIRFAX, IOWA.—Articles of incorporation have been filed by the Fairfax Mutual Telephone Co. The directors are H. Shank, Henry Lefebure, George Chadima, George Brownie, James Rogers, William Sonka and J. F. Listebarger. The capital stock is $10,000.

MOORES HILL, IND.—The Chesterville & Moore Hill Telephone Co. has been incorporated, with a capital stock of $180. The incorporators are Will A. Wheeler, Burt Marshall and others.

WARSAW, WIS.—The Warsaw Rural Telephone Co. has been organized for the purpose of developing the Independent telephone business in the town of Warsaw and covering the territory lying south and southeast of the village. Its lines will be connected directly with the Federal company's exchange in Warsaw.

WATOVA, OKLA.—The Watova Telephone Co. has been chartered with $2,000 capital stock. The officers are: W. A. Munson, president; W. J. Taylor, vice-president; A. D. Young, secretary and treasurer.

WYMORE, NEB.—The Wymore Independent Telephone Co. has been organized, with $25,000 capital stock. The officers are: President, J. A. Reuling; vice-president, Sherman Taylor; secretary, F. E. Crawford, and treasurer, M. V. Moran. The officers, including H. Lacqe, James Shields, Dan Delehant, George Gerdes and Dr. C. C. Gafford, comprise the board of directors.

Construction.

MONMOUTH, ILL.—The Monmouth Telephone Co. is preparing to construct a toll line from Monmouth to Aledo.

ONAWA, IOWA.—The New State Telephone Co. proposes to spend $20,000 here in improving its system. It will install a common battery system, new instruments, etc. The rates will be slightly raised.

NYSSA, ORE.—The Malheaur Home Telephone Co. is planning extensive reconstruction work on its lines in this town and vicinity.

CROCKETT, TEX.—The Crockett Telephone Co. contemplates improving its exchange at a cost of approximately $15,000.

CONCRETE, WASH.—The stockholders of the Skagit River Telephone Co. have decided to extend the telephone lines to Marblemount from Rockport, a distance of 10 miles. W. Jennings is president of the company.

RIVERSIDE, WASH.—J. H. Green, president of the Trunk Creek Telephone Co., announces that a line is to be constructed from Synarep to Anglin.

Elections.

CHERRY VALLEY, ILL.—The Farmers' Union Telephone Co. has held its annual meeting and the following directors were elected: C. C. Maguire, Charles Fox, Benjamin Knappenberg, A. C. Watson and Henry Aves.

SUMMUM, ILL.—The Summum-Spava Telephone Co. held its annual meeting recently and elected the following officers: H. O. Robinson, president; C. Platte, vice-president, and N. Weber, treasurer.

COLUMBIA CITY, IND.—The stockholders of the Farmers Mutual Telephone Co. have held their annual meeting, electing the following directors: Thomas Jellison, E. E. Rindfusz, Jesse Miller, Levi J. Keiser, Melvin Blain, W. H. Carter, Isaac Humbarger, Albert Bush, Irvin Kreider and Jacob H. Kauffman. The directors elected the following officers: President, Albert Bush; vice-president, E. E. Rindfusz; secretary, Melvin Blain; treasurer, W. H. Carter. R. R. Scott was retained as manager for the ensuing year.

MONROE CITY, MO.—The annual meeting of the Farmers & Merchants Telephone Co. has been held and the following directors elected: James Smith, J. A. Yates, William Hamilton, W. J. Rouse, Dr. J. H. Bell, T. A. Wilson, I. L. Owen, W. H. Elliott, A. Lee Ely, A. C. Meyer and John Kendrick. The directors elected officers as follows: James Smith, president; William Hamilton, vice-president; T. A. Wilson, vice-president; I. L. Owen, secretary and manager; W. R. P. Jackson, treasurer. William Hamilton, I. L. Owen and W. J. Rouse form the executive committee.

SHAMOKIN, PA.—The stockholders of the Elysburg, Numedia & Bear Gap Telephone Co. held their annual meeting recently and elected the following directors: Jacob Leisenring, Silas G. Pennsyl, Walter W. Huss, Irvin Kriesher and N. G. Adams. The board elected the following officers: President, N. G. Adams; vice-president, Walter W. Huss; treasurer, Silas G. Pennsyl; secretary, Charles M. Kline.